A RICH CABINET, WITH Variety of Inventions;

Unlocked and opened, for the recreation of Ingenious Spirits at their vacant hours,

Being Receits and Conceits of ſeverall Natures, and fit for thoſe who are lovers of Naturall and *Artificiall Concluſions.*

Whereunto is added, variety of Recreative Fire-Works, both for *Land*, *Aire*, and *Water.*

ALSO

Fire-works of Service, for Sea and Shore, very fitting for theſe Warlike times of Action.

Collected by *J. W.* a lover of Artificial Concluſions.

The ſecond Edition with ſome Additions.

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TO ALL LOVERS of Ingenious and *Artificiall Concluſions.*

COurteous Reader, (you know, and I know, that) the Wits of this Age are acute and various, therefore how to pleaſe all mens fancies, is a Task too ponderous for my undertaking. I have here unlocked and

opened to your view a rich Cabinet of varieties; If there be any thing therin contained that may yeeld you profit, ſolace of the mind, recreation of the ſpirits, or content, I ſhall think my labour well beſtowed, and be glad; If it be otherwiſe, I ſhal be ſorry that I have nothing therein to pleaſe your mind, intreating you to ſhut downe the lid againe, and then I hope there is no hurt don.

This may be compared to a Garden compoſed of ſundry varieties, wherein you may pick and cull out thoſe Flowers which beſt pleaſeth you, and are fitteſt for your pleaſure or profit: For the laborious Bee gathereth

gathereth her cordiall Hony, and the venemous Spider her corroding poiſon many times from one Flower. And I know that there are ſome envious Criticks that will ſnarl at me for publiſhing many things contained herein; But I care the leſſe, becauſe I aime at the publique and no private end; And no man (I think) ſhould be born only to himſelf, and hide his Talent: And therefore theſe few Receits which I have collected, with divers of mine own, (gentle Reader) I dedicate freely to thy uſe; Knowing that Art imitating Nature, glories alwaies in the variety of things which ſhe produceth, to

ſatisfie the minds of curious Inquiſitors of Natural and Artificiall Concluſions. Therefore I doubt not but there are many things contained in this ſmall Volume, that wil give ſatisfaction to the ingenious, for whoſe ſakes I have compiled it: So taking leave, I will ever remain

An Artiſts Friend,

JOHN WHITE.

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A rich Cabinet, with variety of Inventions.

RECEIT. I.

How to make a glorious light with a Candle, like the Sun-ſhine.

THis is a rare Conceit, and fit for thoſe Artiſts, or others that performe curious and fine workes by Candle-light, as Jewellers, Ingravers, or the like, or thoſe which are weake ſighted to read by, never dazeling the eye.

Goe to the Glaſſe-houſe, or Glaſſe-ſhop, and let them blow you a thin round Globe-glaſſe, bigger then a penny Loafe, (the bigger the better) with a ſhort neck like a Bottle, they know how to make them. When you have this Glaſſe, with Glew or Wax bind a piece of Tape or Pack-thread about the neck or top, making a little loope therewith to hang by; then fill your Glaſſe with

the pureſt Conduit or Spring-water you can get (putting ſome Aquavitæ therein to keep it from freezing) ſtopping it cloſe, to keepe the duſt out; having thus done, if you wil uſe it at a Table or Bench, knock a Tenter-hook or Naile into the Seeling or Shelfe, and with a Tape or Packthread faſten it to the loope and hang it up; (but a round ſtick were better to hang it on, putting it into a poſt or hole in the wall, that you may let it higher or lower at your pleaſure in turning the ſtick:) then behind your Glaſſe ſet a Candle lighted upon the Table, and you ſhal have a glorious light, through the Glaſſe and water for your purpoſe; behold the Figure following.

Some uſe to place a ſheet of oyled paper betwixt them and a candle, and this wil cauſe a good light

RE-

RECEIT II.

How (for a Wager) to cleave a thin Groat, or other piece of Silver in ſunder, like two Groats.

THis to many wil ſeeme impoſſible, yet may thus bee done. Take three ſmall Pins, and prick them downe upon a board, or Table triangular-wiſe, and then take a thin whole Groat and lay it levell on the heads of the three Pins, as you ſee in this ſame Figure; having thus done, take a piece of Brimſtone, and bruiſe or beat it to Powder, covering the Groat therewith, all over, in a pretty thickneſſe, and then with a lighted peece of paper, or a candle, ſet the Brimſtone on fire untill it be conſumed; when this is done, and the fire out, you ſhal ſee the edges to open a little like a dry Oyſter, then take a Knife and put into it, and it wil eaſily cleave

in ſunder, having the impreſſion on both ſides very perfect.

RECEIT III.

To lay one end of a Staffe or Stick upon a Stoole, or Table, and to hang a Paile full of water at the other end, having nothing to hold on the ſtick, nor nothing under the Paile.

TO performe this conceit, doe thus; Lay one end of a Staffe or Stick a pretty way upon a Table or Stoole (ſo that it roule not off) letting the other end hang over the Table likewiſe; (as you may ſee in this Figure here expreſſed;) then take a Paile full of water and hang the bayle or handle upon the ſame; but you muſt have another ſhort ſticke that wil reach juſt from the inſide of the bottome of the Paile to the long ſticke on the Table, placing the ſhort ſticke juſt under the bayle

bayle very ſtiffe; and then ſhal the Payle of Water hang from the ground upon the long ſtaves end on the Table without falling, ſeeming very ſtrange; but this is ſomething difficult at firſt, till you hit juſt in the center of gravity: yet I have often done it.

RECEIT IV.

How to make dainty ſport with a Cat.

IF you wil have ſome ſport with a Cat, then get a little Bel, ſuch as the tame Hawkes have at their legs, and tye the Bel ſomething hard at the end of the Cats tayle, and let her go; ſhe feeling of her tayle ſmart, and hearing of the Bel to gingle, ſhe wil run up and down as if ſhe were mad, flying againſt the walls and windowes; then if ſhe can, ſhe wil get into ſome hole to hide her ſelfe, but when ſhe wags her tayle never ſo little, then out ſhe comes, and is as mad as before, and never wil reſt in quiet till it be taken off, or ſhe can get it off her ſelfe.

Another.

Some have ſhod a Cat round, with putting melted Pitch into foure Walnut-ſhels, and

placing her feet therein, and ſhe will make pretty ſport.

Another.

I was told of a merry Fellow that came into an Ale-houſe in cold weather, and finding but a reaſonable Fire, ſaid, Hee would make the Cat piſſe it out; and watching his opportunity, he getteth his Hoſtiſſes Cat, putting her head betwixt his thighs, and holding her foure feet faſt in one hand, and with the other hand held up her tayle neere the fire, and ſhe did piſſe ſuch abundance that ſhe quite quenched the ſame.

RECEIT V.

How to make very pretty ſport with Ducks, or Poultry.

ONe Summers day my ſelfe and two or three Friends, walked into the Fields for our recreation, and being dry and hungry, we went to a Victualling-houſe in a Country Village, where we could get nothing to eat but Bread and Cheeſe; and ſitting in an Arbour, the Womans Ducks being neere us, we flung them our parings of Cheeſe,

Cheeſe; the Ducks were very greedy of the ſame; (then quoth one of our company,) I wil ſhew you ſome ſport.

Preſently he getteth about a yard of ſtrong thread, and finding a little rag of red cloath, tyeth it to one end of the thread; and at the other end tyeth a peece of Cheeſe (ſomewhat leſſe then a Beane) with part of the rind on, and throweth it amongſt the parings to the Fowle; preſently one of them ſwallowed it down, now the reſt of the Thread and the Rag dragged behind her, and ſhe wadling up and downe, perceived the red Rag to follow her, of which ſhe was ſore afraid; then ſhe did run from place to place, not knowing what to doe, at length ſhe tooke wing and flew into a Pond of water, and there ſhe quackt, but preſently ſhe ſpy'd the rag to ſwim after her, then downe ſhe dived, then up againe, then downe, then up, at length out of the Pond againe in her former poſture; at which the Woman was amazed, and thought her Duck was bewitched: But at the length the thread was tangled at ſome buſh or other, and ſo broke, or pulled the Cheeſe out of her belly, and then ſhe was quiet.

The like ſport you may have with other Poultry, by tying a long white Gooſe-quil,

(or a light ſtick with a rag on the top) upright at her tayle.

RECEIT VI.

How to have pretty ſport at Cock-fighting, with a ſingle Cocke.

TAke a pretty big Looking-glaſſe, and ſet it againſt a wall on the ground in any Roome or other place (not ful upright) tying the ſtring of the Glaſſe with a nayle to keep it from falling; then put a Cock into the room, and throw ſome crums neere the Glaſſe, and when he ſeeth his picture therein, you ſhall have dainty ſport with him, for he wil fight vehemently with his owne ſhadow, ſuppoſing there is another Cock, for as he moves, ſo doth his ſhadow; ſometimes with his motion he looſeth it, and then he wil look behind the Glaſſe for the other Cock, and not finding him, he wil clap his wings and crow, as though he had got the victory; but ſpying it againe, he wil begin a freſh battle.

If you pleaſe, you may hold the Glaſſe in your hand, moving it up and downe, and he wil doe the like.

RECEIT VII.

How to know the hour of the day or night at any time, by a Ring and a Glaſſe, being a dainty clock.

TAke a ſmal Thread, and put it through a Gold Ring, or other like Ring, and doubling the Thread, tye a pretty big knot at the end, and cut it off, let the doubled Thread be ſeven or eight inches long, then take a Boleglaſſe, and ſet it on a Table, and hold the knot of the thread ſomething hard betwixt the ends of your fore-finger and your thumb, as you ſee here in the figure, which wil cauſe the Pulſes of your wriſt to beat; let the ring hang in the middle of the Glaſs, a little within the rim, then the working of your Pulſes wil make the ring to move ſtriking upon the ſides of the glaſs the houre of the day or night, & then the Ring wil ſtand ſtil againe,

RE-

RECEIT VIII.

Another excellent Rule, to know the houre of the Day or Night at any time.

IF any two (or more) Parties be in compa-ny together, let one of them take ſome-thing from the ground, (what they pleaſe) and give it to another party ſtanding by.

Now, if the thing taken up hath growne, and may grow againe, as Seeds, Hearbs, or the like, it is then 1. 4. 7. or 10. of the clock, or very neare.

If it did never grow, nor never ſhal, as Stones, Mettals, pot-ſhards, Glaſſe, or the like, it is then 2. 5. 8. or 11. of the clocke, or very neare.

But if it hath growne, and wil never grow againe, as Sticks, Chips, Shels, or ſuch like, it is then 3. 6. 9. or 12. of the clocke, or very neare.

But remember this Caution.

That both they that gives judgement, and they that taketh up the thing, doth not know what houre it is before they try the Conceit.

RE-

RECEIT IX.

How to ſpit three Capons upon one ſpit at once, and to have an equall fire at each of them, yet one ſhall be quite raw, the other be well boyled, and the third thoroughly roaſted.

I Have heard that this Conceit was performed by a Noble-mans Cooke upon a Wager, and thus he did it. To tend the firſt Capon hee had a Boy that continually baſted and poured cold water on the ſame, and ſo kept it raw.

To the ſecond, he had another like attendant to baſte, and poure continually ſeething and ſcalding water, and that was wel boyled.

The third he tended himſelfe, baſting it with Butter, and that was thorowly roaſted, and ſo he won the wager.

RECEIT X.

How to make two Knives (with a ſhort ſtick) to hang upon the brim of a Glaſſe without falling.

TAke a little ſtick, ſome foure inches long, and make it ſharp at one end like a Butchers

Butchers Scure, and then get two Knives, ſomewhat of an equal poiſe, and pricke the points of them towards the bigger end of the ſtick, on each ſide ſlope-wiſe, as you may ſee here in the Figure; then put the ſmal end of the ſtick upon the rim of a Glaſs of wine, or beer and you may take up the Glaſſe and drink, and they wil not fall off.

RECEIT XI.

A ſpeedy way how to make a Horſe fat, plump, and luſty.

TAke *Commin-ſeed, Anniſ-ſeed, Enula-campana,* and *Turmerick*, a penny-worth of each, ſeeth them wel with three heads of Garlick in a Gallon of Ale, then ſtreine it, and preſſe out as much of the ſubſtance as you can wel wring out, and give it your Horſe to drink bloud-warme, a full quart at once; then ride him till he be hot, then afterward

terward ſtable him, curry and litter him wel until he be cold; doe this two or three mornings together, and then turne him to graſſe, and he wil thrive wonderfully in a ſhort time: if there were a handfull of *Groundſell* ſodden with the aforeſaid ingredients, it would doe well.

Now if you wil not put him to Graſſe, but keep him in the Stable, give him to eate with his Provender ſome of the roots of *Enula-campana*, with ſome *Comminſeeds* beaten together, or the *Enula-campana* ſhred ſmal, ſhred for fourteen dayes together; this wil make a leane Horſe to thrive, and grow fat in one moneth more then he would otherwiſe have done in a quarter of a yeare.

RECEIT XII.

How to keep a Horſe from tyring by the way, and to make him ſome at the Bit.

WHen you are to ride, and fear that your Horſ may tire, carry with you (in ſome lethern Bag) a good quantity of the powder of *Enula-campana*, and when others doe baite their Horſes in their ordinary manner, your Horſe

Horſe being firſt wel walked, rubbed, and littered, then give him a good handfull of your powder in a quart of ſtrong Ale or Beere, with a horne, tying his head high to the rack; and you need to give him no other Provender (or very little) till night; then let him be wel meated, and give him in the morning two penny-worth of Bread, and his Ale and Powder, but remember to water at night.

RECEIT XIII.

How one may put his finger, or waſh his hands in melted Lead, without danger, or burning.

TAke an ounce of Quick-ſilver, two ounces of good Bole-Armoniack, halfe an ounce of Camphire, and two ounces of Aquavitæ; then mingle them together, and put them into a brazen Morter, and beat them with a Peſtle; having thus done, annoint your hands all over throughly wel with this oyntment, and then you may put your finger into melted Lead, or you may waſh your hands therewith, if one poure the Lead upon them, and it wil neither ſcald nor burne you.

RECEIT XIIII.

A very pretty and ready way to teach Children or others, ſuddainly to learne their A. B. C. *in manner of play.*

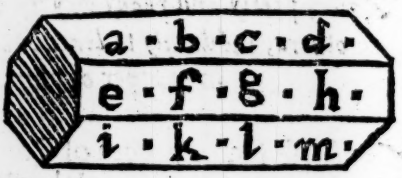
CAuſe foure peeces of Bone or Wood to be cut into ſix ſquare like Dice, and upon every ſide or ſquare let one of the Letters of the Alphabet be ingraven or writ; as, A. B. C. D. E. F. upon one of them, then G. H. I. K. L. M. on the other, and ſo of the reſt in order, as you may ſee here in the Figure.

Now the Child taking delight, and uſing to play with them (amongſt other Children, and being told what Letters are uppermoſt, wil ſoon learn their Alphabet, as it were by the way of ſport and paſtime.

Alſo, you may cauſe one peece of bone or wood to be made into ſix long ſquare ſides, about an inch and a halfe of length, and let each ſide be ingraven, or written with foure

Letters

Letters, as a. b. c. d. and ſo of the reſt of the ſides; and let them throw it, and name thoſe Letters which are uppermoſt; and when they have learned the great Letters, you may write the ſmall Letters on, as it is here on the Figure.



RECEIT XV.

An excellent way to teach one to read ſpeedily, and truly, that before could not diſtinguiſh their Syllables.

LEt a Schollar, or one that can read wel, take any Book of ſmall value, and at every Syllables end underneath, or at the top, with a ſmall Pen of Inke, let them make a little ſpeck or mark; but if the ſpeck or marke were made with red Inke it were the better; Or if it be in a Book that you would not deface, then take a ſmall Pin, or Needle, and prick little holes at each Syllable, which wil hardly be perceived. This experiment is beſt to be made with hard words of many Syllables, as in the example following.

Abraham,

Abraham, Achitophel, Bartholomew, Chriſtopher, Demetrius, Annabaptiſt, Mathematician, Nebuchadnezzar, Quotidian, Patrimony, &c.

Theſe to the ingenious wil ſuffice, for I have known thoſe which by no means could be brought to read, yet in a ſhort time by this method they have learned to read perfectly.

RECEIT XVI.

Of divers rare and dainty conceited motions, performed by the operation of the Magnet, *or* Load-ſtone.

MAny and wonderful Mathematical concluſions are performed by the *Magnet*, or *Load-ſtone*; only I wil give a touch at ſome few for recreation.

Theſe ſtones are to be had at the Iron-mongers, but they ought to be poliſhed and made fit by a cunning Artiſt. This ſtone hath his two Poles, one North, the other South, anſwerable

ſwerable to the Poles of the World. For if you take a peece of Wyre of foure or five inches long, and touch one end thereof with a Load-ſtone, and then thruſt it through a peece of Cork, putting it to ſwim in a Baſon of water, preſently you ſhall ſee one end of the Wyre wil turne ful North, and the other ful South.

This Receit is profitable for ſome Travellers, who having a Sowing-needle about them that is touched with this ſtone, may pricke it in ſome little light peece of Wood or Corke, and place it in the water, and it wil ſet out the North and South inſtead of a Compaſſe.

If for Recreation you take two Wyres, and put each Wyre into a Corke, touch one Wyres end with the North end of the Stone, and the other Wyres end with the South end of the ſtone, and then put them both into a Baſon of water a pretty way aſunder, yet they wil begin to move and ſtirre, and draw nearer and nearer together, and on the ſuddaine joyne and meet: Now if upon thoſe Wyres or Corkes there were placed little paper Tilters on Horſe-backe, they would run their courſes at one another in the water very prettily.

Alſo

Alſo, if this ſtone or Magnet be incloſed in a box of Wood, Stone, Silver, or Braſſe, yet it wil extend its operation and working in many pretty and ingenious practiſes, admirable to behold.

As for example; If you wil make the formes and pourtraitures of divers things in thin Paſt-board, as Horſe-men, Foot-men, Ships, Boates, Beaſts, Birds, Flyes, Wormes, Serpents, or the like; you may cloſely convey into them a ſhort peece of Wyre, and then place them upon a Board, Trencher, or Paſt-board; and if you wil have them move or walke, then hold the Load-ſtone cloſe in your hand, under the board, and that way which you move your hand underneath, that way the Images wil move and creep on the top.

Alſo, if you place the Load-ſtone privatly to, or neere the Seeling, or over a Doore, and then hold a peece of Iron neare to it (tying a thread to the Iron) that it touch not the ſtone, which wil attract it, and then the Iron wil ſeeme to hang in the Ayre. If you touch an Iron Ring with this ſtone, it wil take up a dozen or more Rings together, hanging one to the other like a chaine. Alſo, if a Knives point be touched there-with, it

wil take up Needles or VVyre, and by it you may know the counterfeit, or Newgate halfe-penny, as ſome call them.

Many other rare concluſions may be performed by this ſtone, which I forbeare to write of. Fire, Garlick, or Onions, ſpoyleth the vertue of this ſtone; therefore let it not touch or come neare them.

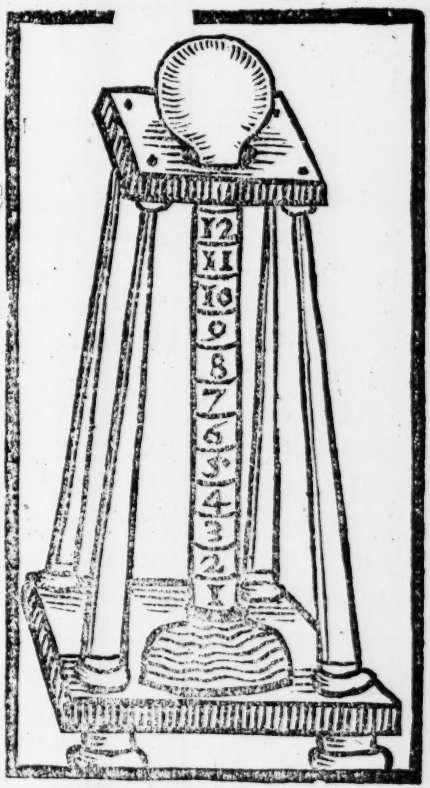
RECEIT. XVII.

The making of the Thermometer, or Weather-Glaſſe, whereby you may certainly fore-tell the alteration and change of the weather, a good many houres before it commeth to paſſe.

THis VVeather-glaſſe is compos'd of a quantity of Water and Aire Artificially incloſed therein; the water being ſubject to a continual motion (either upward or downward) as the weather changeth: The Glaſſes you may have ready made at the Glaſſe-ſhops, but be ſure to chuſe the longeſt and ſlendereſt ſhanked glaſſes, with a ſmall head, for they are beſt: You muſt alſo have another glaſſe for a Ceſtern at the bottome to receive the water; the framing of it is thus.

Make a frame taper wiſe of ſome fine light Deale

Deale or other wood, (only let the bottome board be ſomewhat thick and heavie to make it ſtand the ſteadier,) and let the head or uppermoſt board be leſſer then the bottome, having a hole in the middle to put the glaſſe thorough, as you may ſee in the Figure.



Your Frame ſhould be about a quarter of an inch longer then the ſhank of the Glaſſe, becauſe the lower end of the ſhank ſhould almoſt reach to the bottom of the Ceſtern: Now before you put in your Glaſſe, you muſt divide the ſhank into certaine degrees, from 1. to 12: or more, beginning from the rim of the Ceſtern upwards, placing figures thereon: having

thus done, turne the head of your long glaſſe downward, and with a Funnel fill it almoſt full of water, then put the Ceſtern on the bottome board, and holding the frame ſloping, put the ſhanke of the Glaſſe (through the hole at the head) into the Ceſtern, and then ſet it upright. Now you muſt know at what degree to ſet your water, according to the ſeaſon of the yeare: for if it be in Summer, and very hot weather, then to ſet it at one or two degrees are beſt, if the weather be temperate, then three or foure, but in cold or froſt ſet it at nine or ten. To hit theſe degrees, (if your water be not low enough) you muſt pull up your Glaſſe a very little way from the bottome of the Ceſtern, and very ſuddenly put it downe againe; If yet it be not at the right degree, pul it up againe, and quickly downe (as before) till you have your deſire.

But take heed, for if your water be fallen too low in the Ceſterne, then you muſt take them out, and begin your worke againe. VVhen it is thus done, wax or cement your Glaſſe and Ceſterne together, and then you may cover and make a Rock about your Ceſterne, with Paſt-board or the like, glewing or paſting peeces of Mother of Pearle ſhels,

Smiths

Smiths Cinders, peeces of Glaſſe, Antimony, or other ſhining things what beſt pleaſeth your fancy; or you may cover it with Moſſe, or the like, and it is finiſht.

The quality of the water in this Glaſſe, is to aſcend by degrees with cold, and to deſcend with heat; for in the Winter the water wil be at the top of the Glaſſe, and in Summer down to the Rock. The water ought to be very cleere, and coloured by Art, both for ornament, and the plainer to diſtinguiſh it from the Glaſſe: If you would have it green, uſe Verdigreaſe; if yellow, uſe Saffron, or Turmerick; if red, uſe Braſil, or Turnſoile.

The uſe and property of the Glaſſe.

By the uncertaine motion of the water in this Glaſſe, it is a certaine ſigne of fickle and unconſtant weather; but contrary, the continuance of the water at any one degree, is a ſure token that the weather wil continue at that ſtay it is then at, whether it be faire or foule, froſt or ſnow. But when the water either riſeth or falleth, the weather wil then preſently change: Alſo, the ſudden falling of the water is a ſure token of wet weather.

RECEIT XVIII.

A pretty way to catch Kites, Ravens, Crowes, Mag-pies, or the like, alive.

GOe to the Apothecaries, and beſtow two pence in *Nux vomica*; then beate them to powder, or ſlice it as you doe Ginger; this being done, take raw Fleſh or Liver, and cut it it into little peeces or gobbets, that the Fowl may ſwallow them whole, then cut holes in the ſame, and put your powder or ſlices therein, and then lay theſe pieces where they haunt; but as ſoone as they have ſwallowed down the ſame they wil flye to the next high Tree they can come at, and this preſently makes them ſo drunk, or ſick, that they ſtreight wil fall down from the top of the tree to the ground, that you may take them up alive with your hand: But you muſt be ſure to watch them, and run preſently to the tree, for they wil ſoone recover and flye away.

I beleeve if it were ſodden with other Grain, it would have the like operation with other Fowle.

RE-

RECEIT XIX.

A ready way to catch Pidgions, or other Fowle.

TAke peeces of browne Paper, and roule them round, making Coffins of them, ſuch as the Grocers make to put their Fruit in, let them not be above a finger long, paſt the ſides and ends of them with ſome ſtarch, clip the upper part of them round with a paire of Sheeres, then annoynt the inſide of the uppermoſt skirts of them round about with Birdlime, or ſome ſtuffe that wil but cling to the Feathers: But you muſt (a day or two before you uſe it,) lay or ſtrew ſome Peaſe or other Graine to make them haunt the place, and they wil be the leſſe feareful; then if you pleaſe make a hole in the ground a little way and put your coffins upright or ſloping therein, putting a few Peaſon or Corne in them, ſtrewing here and there Peaſon neare them; and when ſhe pecketh into the coffin ſhe is immediatly hooded, and blinde-folded, not ſeeing which way to flye, and thus you may take them eaſily.

RE-

RECEIT XX.

A merry Receit, being a ready and ſure Way how to catch a Pick-pocket.

AS I was writing the former Receit, it put me in minde of a pretty Conceit that a Friend once related to me, which was thus: A Gentleman being in a throng in a Faire, had his Purſe pickt out of his pocket; hee miſſing it was ſomewhat vext, but could not mend it, but ſtudied how (if he could) to be revenged: preſently he buyeth two pennyworth of Fiſh-hookes, and cauſeth a Taylor to ſow them round about toward the upper part of his pockets, with the points of them downwards; and ſo the next day away hee goes to the Faire againe amongſt the throng, throwing his Cloak on one ſhoulder, ſeeming careleſſe of his pocket, wherein he had ſtore of mony: Preſently there was a Diver nibling at the baite, and nimbly had his hand in his pocket: The Gentleman being wary (perceived the Fiſh had ſwallowed the hook) gives a jerk aſide, which cauſed the hookes to catch good hold in his hand, and then he had him ſure: Then ſaid the Gentleman,

Fel-

Fellow, what maketh thy hand in my pocket? O good Sir, (replyed the Pickpocket) pardon me, I cannot pul it out: Come (ſaith the Gentleman ſoftly to him, becauſe no body ſhould take notice) goe along with me; So cheek by jole they walked together, with his hand faſt in the pocket (but covered with his Cloake) and to a Taverne lovingly they goe together, where the Gentleman told him of the loſſe he had ſuſtained the day before, and making of him to reſtore backe his mony, he cut out his pocket, and let him goe. Surely this Pick-pocket had good ſtore of picking worke to get the hookes out of his hand againe.

RECEIT XXI.

How to make Fowles and other ſmall Birds drunke, that you may take them with your hands.

YOu muſt obſerve what meat they love, or uſe to eate, as Wheat, Barley, or other Graine, and lay the ſame to ſteep in the Lees of Wine, or in Aquavitæ, or in the juyce of Hemlock, and ſtrow the ſame Graine in the places where the Birds doe haunt.

An

Another.

Take Tormentil, and boyle it with ſtrong Wine, Wheat, Barley, or other Graine, then ſtrew this in thoſe places where you intend to take them, or where they uſe to haunt, and the Birds wil eate the peeces amongſt the Graine, which wil make them ſo drunk that they cannot flye away.

Another.

Make Paſt with Barley meal, Onion blades, and Henbane ſeeds; and put or throw it where the Birds doe haunt.

Theſe experiments are beſt to be done in Winter in a deep Snow.

RECEIT XXII.

A dainty way to catch Fiſh in a darke night, with a Candle under water.

GEt an Urinal, and put pretty ſoft clay therein, and with ſomething that is flat at the end preſſe the clay gently to the bottom of the glaſſe, ſmoothing it as wel as you can; then take a ſtick and ſhape it about the bignes of a Candles end, wet the ſtick, and put it into the neck of the glaſſe, making a hole in the middle

middle of the clay, as you make clay candle-ſticks; then make a little hoope of a Willow ſtick, and tye peeces of Corke in foure places of the hoope equally diſtant, and get a thin light round peece of board, and with foure little ſticks of an equal length, tye one end of them to the Corks, and the other ends faſten to the board to ſupport it, as you may ſee here in this Figure.

In the board you muſt make a hole in the middle to put the neck of the Glaſſe through and there tye it, and make a loope with a ſtring to the board that you may with a long pole put it into the water: when you wil uſe it, put your Candle into the Glaſſe in the clay ſocket, a little below the brim, that the wind blow not the light out. If you pleaſe, you may

may with Wax or Glew put little peeces of Looking-glaſſes, or other Glaſſe under the Board, on that ſide next the water; and this light wil ſhine a great compaſſe in the water, that the Fiſh wil ſtreight reſort to the ſame, where you may very eaſily take them with a Net.

This might be done with the Glaſſe alone, by tying Corks about the neck of the Glaſſe, to keep the mouth above water.

RECEIT XXIII.

An excellent Baite to catch Fiſh with an Angle.

MAke Paſte with fine Wheat Flower, tempered with a little Saffron and Sugar, and baite your hooke there-with, and they wil bite apace: This is a good baite for Roach, Dace, and ſuch like.

Another.

Take the crum of a new penny White-loafe, and an ounce of *Coculus India*, and an ounce of Henbane-ſeed finely powdered, temper the ſame wel with good Aquavitæ into a Paſte, and divide them into ſmal peeces, bigger then graines of Wheat, and then caſt handfuls in at once into the water where

is

is ſtore of Fiſh, and you ſhal preſently ſee the operation of the ſame.

RECEIT XXIV.

How to make one Watching-Candle, that it ſhall out-laſt three Watching-Candles.

TAke a Paile, or Bucket, and fill it full of water, and ſet it in the place where you intend that your light ſhal ſtand: then take your Candle and warme it at the lower end, and there ſtick a braſſe farthing token, or ſuch like; and when you wil light your Candle, put it gently downe into the middle of the water, (but be ſure that the bottome of the Candle doe not touch the bottome of the Paile) and then it wil ſwim upright to the very edge neere the light. The reaſon that the Candle wil laſt ſo long, is cauſed by the coldneſſe of the water; and this is a ſafe way that no Rat can run away with the Candle lighted, as I have heard that they have done, by endangering the houſe with fire.

RECEIT

RECEIT XXV.

How to write any name or mark upon a Paper, and then burn it to aſhes, yet afterward it may be read plainly.

TAke a new clean Pen that was never written withall, and dip it in your owne water, as you do in Inke; then ſtrip up your Shirt-ſleeve above your wriſt, and upon your arme write your name, or any name, or any mark, and then let it dry on your skin, and nothing wil be ſeen; then put down your ſleeve and button your wriſt. (Doe this privately, and it wil cauſe ſome to wonder:) then take a peece of white paper, and write your name, or the mark thereon, with another Pen of black inke, (but let it be written as like the other as you can) then take the paper and burne it, and lay the aſhes on a Table, and ſtripping up your ſleeve, rub the aſhes hard with your finger, where you had written with your water, then blow off the aſhes, and the name or mark wil plainly be read on your arme in black Letters.

RECEIT XXVI.

How to ſee plainly any thing in a dark Roome, in at a Doore or Window, ſtanding a great diſtance off.

IF there be never ſo darke a Roome, with a Doore or Window open; Take a Looking-glaſſe in your hand, and hold it againſt the Sun, at a great diſtance from the Doore or Window, and moving the Glaſſe up and downe, till the reflection of the Sun be upon your object, and then you may perfectly behold any thing in the Roome, or ſee to read a Letter.

Some unhappy Boyes uſe to dazle peoples eyes with a Glaſſe in this order, as they walke the ſtreets.

RECEIT XXVII.

How to view the back part of your head by Glaſſes.

IF you would behold the back part or ſhadow of your Head (for a Wound, or the like) take a Looking-glaſſe, and hold it

behind your head; and then take another Looking-glaſſe and hold it before you, and from the Glaſſe behind, you may ſee your ſhadow in the Glaſſe before you.

RECEIT XXVIII.

A pretty Tricke to tell, or name all ſpots or court Cards in the Pack, and yet never ſee them.

YOu muſt privately drop a drop of water or drink (about the bigneſſe of a two-pence) on a Table before you where you ſit, and let any body ſhuffle the Packe of Cards; and then taking them into your hand, place a candle on the Table before you (for this Trick is beſt to be done by Candle-light) and holding downe your head (as you may ſee in the Figure) lift the Cards above the brim of your Hat, cloſe to your head, that the light of the Candle may ſhine on the Cards; then in the drop of water (like a Looking-glaſſe) you ſhal ſee every ſpeck of each Card before you draw them, which you may name; or putting your finger upon the ſpots, you may ſay that you feele them out; then lay downe

downe your firſt Card, and name the next, as your firſt Card was the Deuce of Clubs, the next is the five of Spades, and ſo of the reſt.

RECEIT XXIX.

How to keep or preſerve any Fowle, Veniſon, or other pieces of Fleſh, ſound and ſweet for three weeks, or a moneth together, although the weather be never ſo hot.

MAke a ſtrong Brine with Bay Salt and white mingled together, ſo as the water be over-glutted with Salt, and being ſcalding hot, parboyle therein the Fowle, or Fleſh which you intend to keep for ſome reaſonable time, (that is to ſay, according to

the greatneſſe and greaſineſſe thereof; (then hang it up in a convenient coole place, and it wil laſt a ſufficient time, without any bad or over-ſaltiſh taſte.

This is a good way for Sea-men, and others in hot Countries, who are inforced ſometimes to victual themſelves in ſuch intemperate Climates, where no fleſh wil laſt ſweet foure and twenty houres together, by reaſon that they have no meanes to make the ſame to take Salt, which without all queſtion wil enter this way, and make penetration very ſpeedily, by reaſon of the hot and fiery ſpirit of Salt thus prepared.

RECEIT XXX.

How to make a ſpeedy or preſent Drink that Travellers may brew for themſelves, when they cannot relliſh their Beer or Ale at their Innes.

TAke a quart of good water, put therein five or ſix ſpoonfuls of good Aquavitæ, and an ounce of Sugar, with a branch of Roſemary, brew them a pretty while out of one pot into another, and then is your drink prepared,

RE-

RECEIT XXXI.

How to make on the ſuddaine, good drink for Mariners, Souldiers, or for poore people, when Beer is ſcant, and Mault deare.

IN time of extremity, theſe Drinks following wil ſerve to ſuffice nature (as hath been often proved;) Put a good quantity of wholſome faire water, a ſmal portion or few drops of the Oyle of Sulphur, incorporating them wel together, and it is ready.

Another.

One drop or two of the Oyle of Vitrioll added to a good quantity of faire water, and wel ſtirred together, it performeth the like.

Some mingle Vinegar with good water, and it ſerveth very wel to quench the thirſt.

Others wil carry a peece of Allom in their pocket if they are to travel, and know not how to get drink or water; and when they are a dry, they put a peece of that in their mouth, and it wil fetch up moyſture, which wil aſſwage the thirſt.

RECEIT XXXII.

A profitable way to harden Leather, that it ſhall out-laſt other Leather a long time.

THis is a good and profitable Receit for many poore labouring men, and is thus performed; Take and lay ſuch Leather as is wel tanned to ſoake in water, wherein there hath been ſome ſtore of fylings of Iron, a long time, or elſe in the water that hath long laine under a Grinding-ſtone, into which ſuch Iron as hath been from time to time ground away, and there ſetled.

This is good alſo to harden Leather for the Cawkers, or Pumps of Ships, or others, to make them laſt long.

RECEIT XXXIII.

An excellent Receit to make a dainty ſtreight Walking-ſtaffe to have knobs where you pleaſe.

GEt a ſtreight peece of Wood (of your deſired length,) of Holly, Aſh, Service-tree, Walnut-tree, or Peare-tree, let it be free from knots, or ſhakes, then plaine it into ſix

or

or eight ſides, a good deale bigger then your Staffe ſhal be; this being done, get a ſhort Punch of Iron, and let the ſmal end be filed about the bigneſſe that you intend your knobs ſhal be; then lay your Staffe downe upon a Bench or Table, and where you wil make the knobs, with a hammer punch holes therein, and ſo doe on every ſide; then plaine it over againe, til you have made your ſtaffe ſmooth, that there be no dents ſeen thereon; when you have thus done, put it into ſome cauldron of boyling water for a good ſpace, and when you take it out againe, you ſhal ſee that it wil be ful of knobs, for with the heat of the water it forceth the bruiſes (which were made with the Punch) to ſwel out of the wood againe.

You may fyle your Punch like a Starre, or other work, and it wil ſhew very pretty; I once ſaw a Partizan, or Captaines Leading-ſtaffe, which was done in this manner, and being put into a Dyers Cauldron when he dyed blacks, and being dryed, and rubbed wel with Linſeed-oyle, it ſhewed like Ebony,

RECEIT XXXIV.

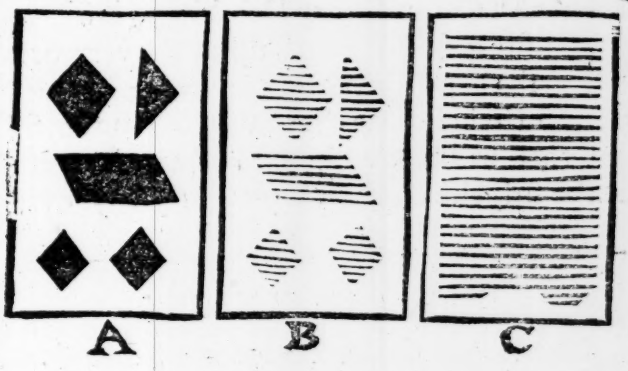
How to write Love-Letters ſecretly, or from one Friend to another, that cannot be diſcovered.

TAke a ſheet of white Paper, and double it in the middle, then cut holes through both the halfe ſheets, let the holes be cut like the panes of Glaſſe-windowes, or other formes what you beſt fancy, and then with a Pinne prick two little holes at each end, and cut your Paper in two halfes, give one halfe to your Friend (to whom you intend to write) the other halfe keep to your ſelfe: Now when you doe write, lay your cut paper on a halfe ſheet of writing paper; and ſtick two Pins through the two holes that it ſtirre not; then through thoſe holes that you did cut, write your minde to your Friend; when you have done, take off your Paper with the holes againe, and then write ſome other idle words both before and after your lines, but if they were written to make ſome little ſenſe, it would carry the leſſe ſuſpicion; then ſeale it up and ſend it.

When your Friend hath received it, he muſt

muſt lay his cut paper on the ſame, putting pins into the Pin-holes, and then he can read nothing but your minde which you writ, for all the reſt of the lines are covered; obſerve the Figure, and it is eaſily apprehended.

Where the Letter A. is placed, that doth ſignifie the halfe ſheet of cut paper with holes; where the Letter B. is placed, doth ſignifie the ſubſtance of the Letter which you write; and where the Letter C. is, doth ſignifie the Letter filled up with lines to joyne to the other words. Now when your Friend writes to you, he muſt doe the like.



Another.

Write a Letter (what you pleaſe) on one ſide of Paper with common Inke, then turne your paper and write on the other ſide with milke

Milk, (that which you would have ſecret) and let it dry; (but this muſt be written with a clean Pen:) Now when you would read it, hold that ſide which is written with Inke to the fire, and the milkie Letters wil then ſhew blewiſh on the other ſide, which may be perfectly diſcerned.

RECEIT XXXV.

How to know when the Moon is juſt at the full, by a Glaſſe of water.

TAke an ordinary Drinking-glaſſe, and fill it full of water up to the very brim, ſo that it doth not run over; let this be done a little before that the Moon be at full, and then at the very inſtant that the Moone is at the ful, the water wil preſently boyl over.

RECEIT XXXVI.

How to know the Moones age at her increaſe.

I Have been told, that a thin peece of Cypreſſe, ſuch as they had wont to make Hatbands of, if you hold it before your eyes in an evening at the increaſe of the Moone, you ſhal

ſhal know how many dayes old ſhe is; As when ſhe is one day old, you ſhal ſee but one Moon, at two dayes old two Moons, at three dayes old three Moons; but afterward you ſhal ſee but one againe.

RECEIT XXXVII.

Another, ſhewing how to know both the Increaſe and Decreaſe of the Moone.

THe Moone giveth ſuch vertue to a ſtone which is found in *Arabia*, called the *Selenite*, of which *Pliny* and others doe write, that within the body of this Stone the Moon ſheweth her ſelf, and increaſeth and decreaſeth according to the courſe of the Heaven.

Another.

Our common Houſe-Cats alſo have this property by the predomination that the Moon hath over them; that their Eye-browes doe increaſe, or decreaſe each day, according to the courſe of the Moone, and her aſpects; which thing is daily ſeen to him that pleaſeth to note the experience thereof.

RE-

RECEIT XXXVIII.

A dainty way how to fetch Oyle, or Greaſe, out of Books, Writings, Papers, or Garments.

GOe to the Apothecaries or Grocers, and buy a penny-worth or two of the Oyle of Turpentine, and put a drop or two upon the place which is Oylie or Greaſie, rubbing it on, and then you ſhal ſee how it wil drinke up the Oyle or Greaſe, and be preſently dry and faire; for this Oyle of Turpentine is a great dryer, and is good to put amongſt oyle-colours, to make them dry ſpeedily.

RECEIT XXXIX.

How to refreſh and ſcoure old Pictures that are wrought in Oyle, making them to look almoſt as freſh as if they were new done.

TAke the Picture out of the Frame, then wipe, or bruſh off the duſt very cleane, and then lay it levell upon a Board, or Table, pouring good ſharpe Vinegar all over the ſame, and there let it lye and ſoak for three or foure

foure houres; if the Vinegar be dried up, then poure on more, continually keeping it wet: Then beat a peece of dry bricke very fine to powder, (and ſee there be no lumps or ſtones therein, for they wil raze and ſcratch the Picture) and then put the powder into a courſe linnen rag, and tye it, and then dip it wel in a Porrenger of Vinegar, and with your rag and powder, rub, and ſcoure your Picture all over very hard, and then with faire water, or a wet clout, waſh the filth away: But if you ſee any ſpots or filth remaine, then ſcoure it againe, and waſh it; then dry it very wel with a cloath, and when you have dryed it, put it againe into the frame, and ſet it in the Sun for a day or two, (for the Sun refreſheth the Colours very much,) and then rub it hard with a dry woollen cloath till you make it ſhine, and then hang it up. This wil cauſe it to look almoſt as freſh as when it was new.

Some uſe to waſh them in Soape, and then oyle or varniſh them over, but that is not good, becauſe that the Oyle or Varniſh wil turne yellow, and gather duſt.

RECEIT XL.

How to keepe Sword-blades, Halberts, Piſtols Knives, Edge-tooles, or other things free from ruſting for ſeven yeares, or more, in a dry houſe.

TAke Fiſh Glew, or Iſing-glaſſe, and cut it in pieces, then with a Hammer, beat or bruiſe it upon an Anvile, or a Stone, and then put it into a little Skellet, or ſuch like, with water, and let it diſſolve over a gentle Fire, ſtil ſtirring it as you do your common Glew; tnen when it is wel boyled take it off, and with a Pencil, or ſmall haire-brûſh, lay the ſame, while it is hot, all over your Sword-blade as thin as may be, and then lay it to dry, and it is done. This thin coat keepeth the moyſtneſſe of the Aire from the Mettle, that it cannot ruſt; but when you are to weare it, or uſe it, take a blunt knife, and you may eaſily ſcale off the thin ſubſtance, and then it wil be as bright as any ſilver.

I verily beleeve, that our common Glew wil do the like, keeping of it in a dry room.

RECEIT

RECEIT XLI.

An excellent Cement for broken Glaſſes, China-Diſhes, or Cups, and ſuch like.

TAke one part of Virgin-wax, and two parts of the teares, or cleere drops, of Maſtick, melt them together, and Cement therewith. But the better is, if you beat the whiteſt Fiſh-glew or Iſing-glaſſe with a hammer till it begin to be clear, and then cut the ſame into very ſmall and ſhort pieces, and diſſolve and melt the ſame over a gentle Fire with Aquavitæ; then let one that ſtandeth by, hold both the pieces that are to be Cemented over a Chafing-diſh of coales till they be warme, and during their heat, lay on the diſſolved Glew with a fine Pencil, then bind the Glaſſe with Wyre, or Pack-thread, to keep it ſteady, and ſo let it remaine till it be cold and dry.

Another.

Take a little quantity of unſlack'd Lime; Wheat Floure, and the White of an Egge, and incorporate them together, Maſtick, Aquavitæ, and White Lead is good; ſo is Iſing-

Iſing-glaſſe, being diſſolved and melted with Rheniſh-wine.

RECEIT XLII.

How to grave Arms, Poſies, or other devices upon Eggs, which may be ſerved at a Table.

MElt Suet pretty warm, and dip in your Eggs in this manner; hold the Egge between your Thumb and yonr Fore-finger, and quickly dip one halfe therein, and hold it in your hand til it be cold, and then dip in the other end that it be thinly covered all over; then take a little Bodkin or Needle, and grave in the Suet what Letters or Words you pleaſe, then lay the Egge thus ingraven in good Wine-Vinegar, or other Vinegar in ſome ſtone Pot or Veſſel for the ſpace of ſix or eight houres, or more, or leſſe, according to the ſtrength or ſharpneſſe of the ſame, then take out the Eggs, and in hot water diſſolve the Suet from the Shels; then lay the Egge to coole, and the worke wil appeare to be graven in the ſhel of a Ruſſet colour. And if the Egge lye long enough in the Vinegar after it is ſo graven, the Letters or Workes wil appeare upon the Egge it ſelfe being boyled,

and

and ſo you may ſerve them up at the Table. And if you care not to loſe the meat, you may pick out the ſame, when the ſhell is through graven, and you ſhal have a ſtrange peece or work performed on the ſame.

RECEIT XLIII.

How to make Wax, either red or greene.

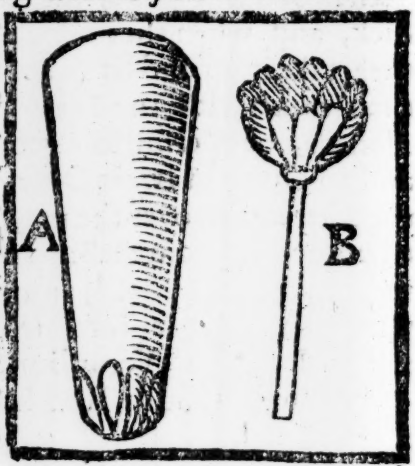
TAke to one pound of Wax in ſummer, three ounces of the cleereſt Turpentine; but if you make it in winter, take foure ounces of Turpentine, melt theſe together over a ſoft fire, ſtirring them with a ſtick, and when they are well melted together, take it off and let it coole a little, and then mixe with the ſame the red root of *Anchuſa*, or Vermilion ground an ounce; and an ounce of ſweet Oyle; ſtir theſe well together againe over the fire, then take it off to coole, and poure it into cold water, and then upon a wet board, and your hands wet, you may roule it into what forme you pleaſe. Inſtead of Vermilion, you may take three times as much Red-lead, but that is not ſo good.

If you will make Greene Wax (inſtead of Vermilion) take the like quantity of Verdigreaſe.

RECEIT XLIV.

A pretty way how to caſt off Flowers in Wax, of divers colours.

CAuſe a Stick to be turned round at one end, (ſomewhat Taperwiſe) like the faſhion of a Poking-ſtick, leſſer, or bigger,(according to the bigneſſe of the Flower you intend to caſt) and at the ſmaller end thereof, with your knife, cut tents or nicks in the ſame, long-wiſe as you ſee here in the Figure: The letter A, ſignifieth the Stick. the letter B, ſignifieth the Flower: Then take a little panikin, and in the ſame melt your Wax with a gentle fire; and when it is melted take it off;



and

and then take your Stick (having a Porrenger of faire water by you) and dip the end into the water, and then ſhake off the water, or ſuck it off, and then dip the ſtick into the Wax, and ſodainly pull it out again, dipping it into the water againe to cool it, and then you may take off your Flower and lay it by; and in this ſort you may make as many as you pleaſe, For Yellow Flowers, melt Yellow Wax; for Red, Red Wax; for White, White Wax; for Green, Green Wax: Now for ſtalks for your Flowers, you may ſtick in a ſmall Wyre, or a Bent of a Raiſon-fraile, or the like. You may have the coloured wax ready made at any of the Wax-chandlers.

RECEIT XLV.

How to make a Bunch of Grapes with Green Wax, that will ſeeme to be naturall.

YOu muſt get a little ſtick turned round at the end, about the bigneſs of an Arrow; and then have your veſſel of green wax melted, (as was ſhewn in the former Receit,) dipping your ſtick in the ſame about the third part of an inch deep, and it will be almoſt in the faſhion of an Acorn-cup, make

a good many of them. Then take an Egge, and make a little hole in the bigger end of the ſhel, leſſe then a penny, and get out the yolke thereof, and dry the ſhel; then with a peice of your green Wax hold it to the fire, rub or daub the ſhel therewith thinly all over, then hold the ſhell in your left hand, and with your other hand take up firſt one cup, holding the ſame a little neer a candle to warme, and quickly ſtick it on your egge, and ſo doe with all the reſt of the cups, till you have fil'd it all over; they muſt be ſet ſomething cloſe together. Now when you have thus done, take a little ſtick, about the bigneſſe of the tag of a point, and tye a Packthread in the middle thereof, and then put the ſtick into the hole of the ſhel, and ſo hang it up: You may cut leaves like Vine leaves in green paper; and faſten them to the ſtring or ſtalk above the bunch: I have made ſome womens teeth to water at this conceit, they ſeeme ſo naturall to the eye; and theſe Grapes wil laſt all the yeare,

RECEIT

RECEIT XLVI.

How to grave and Inlay colours into Gold, Silver, Iron, or Copper, to ſhew like Ammell.

FIrſt cover your Mettall with a cruſt of warme wax, and when it is cold, with a fine ſharp Bodkin draw, or cut out the ſhape or proportion of what you pleaſe, either Letters, Flowers, Borders, or Scutchions, of a reaſonable largeneſſe; then pour upon the ſame empty places (which you have ingraven upon the wax) ſome few drops of ſtrong water, or Aqua-fortis, and let them lye a while; and when you find them deep enough graven, mingle Orpiment and Maſtick melted together for a yellow colour, and Vermilion and Maſtick for a red; and Bice and Maſtick for a blew, and Ceruſe for white, and Ivory burnt for a blacke. Now when your Maſtick hath been melted with any of the aforeſaid colours, let it coole, and then beat the ſame into powder, and lay the ſame powder within the graving, and after lay the Mettle upon a ſmall Charcoale fire till the Maſtick be melted, and it will remaine faſt and firme therein a long time.

RECEIT XLVII.

How to inlay Boxes, Cabinets, or other things with hard Wax.

With a Pen draw upon your Box any thing what beſt pleaſeth your fancy; as Birds, Beaſts, Flies, Flowers, Fruits, Leaves, Trayles, Anticks, Letters, &c. Then take a little knife ground ſharp at the point, and cut or grave out the worke pretty deepe which you have drawn with your Pen upon the wood. when you have ſo done, lay upon the ſame ſome red or green hard Wax, and with a hot Iron melt and rub hard the wax all over into the crevices, or workes which you have cut out, and ſo let it coole; then take a knife and ſcrape away the wax to the boord, and then you ſhall have your work which you drew to be inlaid very perfectly in the colour of your wax, as though it were drawn with a Pen, and will never waſh nor weare off; when you have ſcrapt it cleane, hold it a little to the fire, and it will fetch a gloſſe on the wax, and make it to ſhew the pleaſanter.

RECEIT

RECEIT XLVIII.

How to harden the white of Eggs into an Artificiall Gum, fit for many uſes.

SEparate the whites of Eggs cleane from the Yolks, and beat the whites very well into a cleare oyle, or water, and when it is ſetled, skim off the froath; then put the ſame into Bladders, and hang them in a chimney corner, where fire is uſually kept, to dry, and in a few dayes the ſame will become as hard as Gum Arabick: in hot weather you may hang your Bladders in the Sun to dry; This Gum may be uſed inſtead of other Gums; and with it you may varniſh Prints, or other things that are waſhed in colours.

RECEIT XLIX.

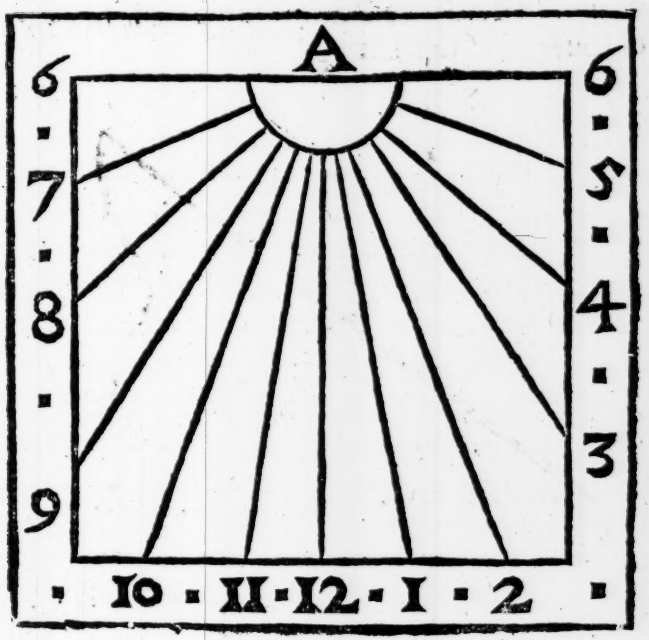
How to make a true South Sun-diall, to be placed upright againſt a Wall, or on a Pole.

I Intend not to ſpeake of the multiplicity of Geometricall and Artificiall ſorts, and making of Sun-dials, (of which many in-

genious Artiſts have copiouſly written;)but only a Mechanick way of two ſorts, for the benefit of ſome who would be glad to know how the houres of the day paſſe away:

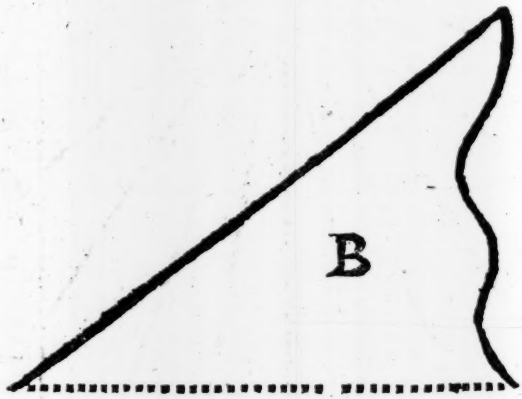
Take a peice of good writing Paper, and rub it over with Linſeed Oyl,and hang it to dry in the Sun; when it is thorow dry, take and lay it over this print of the Diall (or ſome other of this nature) that you may ſee the hour lines through it, holding of it ſafe from ſtirring, (which may be done by pinning it to the margent,) then at the center by the letter A,ſtick a Needle or Pin upright and laying a ſtreight Ruler cloſe to the Pin, draw all thoſe houre-lines which you ſee through the oyled Paper ; then take off your paper, and when you would mark out a Diall, doe thus ; get a board of what ſize you pleaſe, that is ſmooth plained, and will not warp, drawing a ſtreight line juſt down the middle thereof, and lay this paper thereon, and then put your Pin through the center hole toward the top of the ſtreight line on the board, and put another Pin toward the bottom of the line,which is your 12 a clock line, (theſe two Pins keepeth your paper ſteady ;) then with a ſmall Bodkin pricke a hole through every houre-line of your paper

per into the board, and then take it off; then ſtick in your Pin into the center hole of the board againe, and laying the Ruler cloſe to the Pin, and cloſe to each hole in the board, mark and draw your houre-lines; (and note that you may extend theſe houre-lines to what length you pleaſe, according to the bigneſſe of the board;) and then figure it as you ſee in this example following.



Now

Now for the cocke or ſtile of your Dial, it muſt be ſet in the 12 houre line, and muſt be juſt equall in height from the boord, as the triangular Figure marked with B ſheweth; the line with pricks is but to direct you which ſide muſt be next to the boord; The Stile may be made of a thin iron Plate, and Cement in, or of a ſtiffe Wire; the upper end of which muſt be put juſt to the center by A, equall to the 6 houre line: when this is done, you muſt get ſome Painter to paint it in oyle colours, and ſo ſet it up.

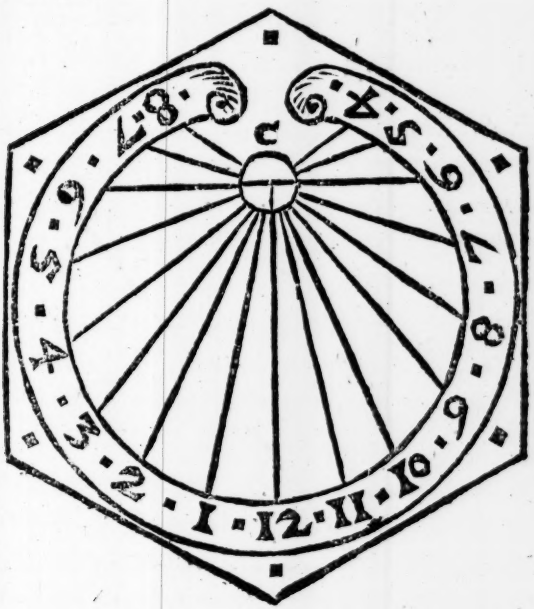


RECEIT

RECEIT L.

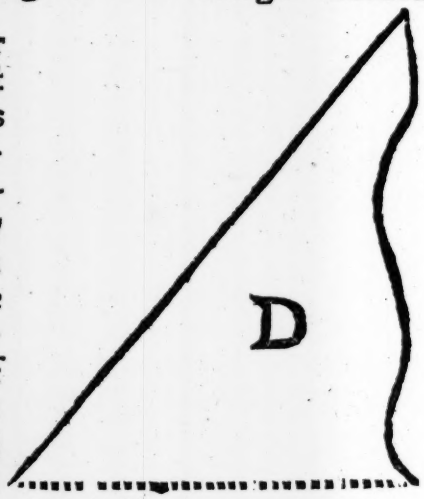
How to make an Horizontall or Flat Diall, to ſtand upon a Poſt, or other place.

THis Diall may bee made into ſundry formes, either foure ſquare, ſix, or eight ſquares, or round as you pleaſe, and it is to be placed on the head of a Poſt, either in Garden, Yard, or at the outſide of a Glaſſe-window where the Sunne cometh: behold the forme.



You

You muſt note, that the hour-lines of this Dial doth vary from the former, and ſo doth the Stile in height: But you muſt work with this as in the other, with your oyled paper, to draw the houre-lines, and to make a line juſt in the middle, for your 12 a clock line. The center of this Dial is hard by the letter C. and muſt be more neere the middle then the other, becauſe it containeth more hours thereon, for the other wil ſerve but from 6. to 6. but this from 4. to 8. You may make this Diall in ſtone, Wood, or Mettall; and remember to make the height of this Stile or Cock according to this triangle marked with the letter D. for it muſt be higher, as you may perceive by this figure. You may make Simmon for to faſten the ſtile, with Rozen, powder of brick, and ſom chalk, mingled together: and with a hot Iron melt it into the creviſe.



RECEIT

RECEIT LI.

A pretty way to make a Sun-Diall on the ſeeling of a room, or chamber, whereby you may know the time of the day, as you lye in bed.

IF you have any window South-Eaſt, or South, which is beſt, and that is for your turne; in the lower poſt, or frame of the inſide of your window, about the middle, faſten with wax a little round peice of Looking-glaſſe, or other glaſſe, about the bigneſs of a two-pence; (you may cut it round with an old paire of Sizers;) but if you place it higher in your window on a ledge, it will be the better, (as you may ſee here in the Figure,) ſetting it levell with the Horizon; and the reflection of the Sun in the Glaſſe wil ſhew on the ſeeling the hour of the day; the center of the Diall muſt be perpendiculer to the Glaſſe. This Dial muſt have no Stile, and it muſt be made like the laſt Horizontall Dial: You may draw the circle, houre-lines, and figures with a Pencil or coale; the black ſpot is the peice of Looking-glaſſe

glaſſe; The Dyall is the Seeling.

RECEIT. LII.

How to make a Candle-Diall, whereby you may know the houres of the night.

ONe Winters evening ſitting by the fire, me thought there might be ſome device for

for a Candle-Dyal; At length it came into my head; I made a little four ſquare frame of Wood, of a piece of a thin Trencher, making the inſide thereof fit for the bottome of a Candle-ſtick to ſtand in, which I did ordinarily uſe; on two ſides of the ſquare I faſtened a little piece of Wyre, not a quarter of an inch long; and juſt where the candle-ſtick ſhould ſtand, on a Table or Boord, I made two little holes with a Bodkin for the ends of the two Wyres to goe into, and then I ſet downe my Candle and Candle-ſtick into the ſquare: Having thus done, I made another long Frame like the Frame of a Picture, and paſted halfe a ſheet of white Paper therein upon a thin boord, and ſo hung it up againſt the wal: Then in the Seeling I faſtened a ſmal Pulley, and on that Pulley I had two little Plummets of lead, one broader at the bottom then the other, and tied them to a piece of Packthread at each end, and ſo hung them in a Pulley, (as you may better apprehend by the Figure;) The broadeſt Plummet I pulled down till it gave a ſhadow on the lower end of the Paper in the Frame on the wall, (which is now the 1. and 7, a clock line) and where the broad bottome caſt a ſhadow I made a ſpeck with my Pen, & then

turn'd

turn'd an Houre-glaſſe, and when that was run out I made another ſpecke, which is the 2 and 8 line, and ſo of the reſt; by theſe diviſions, you may with a paire of compaſſes divide the reſt of the houre lines upwards: You muſt pull down the broad Plummet & ſet it at any time to the houre you pleaſe, as by this, it ſhews that it is halfe an houre paſt 4 or 10 of the clock. You muſt remember to have your candles alwayes of one ſize or weight, as of the eights, or twelves in the pound, or ſuch as you uſually burne. You may take away your candle and candleſtick out of the ſquare frame if you have occaſion

and

and then ſet it downe in its place againe, which keeps all right. I have placed the Figures at each end of the houre-lines, as from 1. to 7. on the firſt ſide, and then from 7. to 12. on the other ſide. Note, when it is juſt 7. on the firſt ſide, then pul down the Plummet to 7. on the other ſide, which I hold to be the beſt way.

RECEIT LIII.

How to keepe Cherries, Peares, Nuts, or other Fruit a yeare, as freſh as they came from the Tree.

WHen they are pretty ripe, cut off the ſtalks, and put them into an earthen pot well leaded, and then cover them wel with Honey; then ſtop the pot with Pitch, or Wax, that no ayre may enter in, and then put the pot in ſome Sellar, or coole place, burying it wel in Sand, and ſo let it remaine till you uſe it.

RECEIT LIV.

How to make Grapes, and other Fruit to have no ſtones or kernels.

IT is ſaid, that if ye do plant or ſet the ſmaller end of the twig of a vine ſomewhatdeep into the earth (which wil take root) that thoſe Grapes that wil grow thereon ſhal have no ſtones, The like effect hath Peaches, Apricocks, Damſons, Cherries, and other Stone-fruits, if the ſmal ends of the cyons be grafted into the ſtocks. Alſo, if you bend downe both the ends of an Apple or Peare-tree cyon, and graft them on both ſides of the ſtock; and the next yeare when they have grown, cut the cyon in the middle, and one ſhal beare fruit with kernels, and the other none.

RECEIT LV.

How to make yellow Roſes grow, and to make Trees and other things grow green all the yeare.

I Have been informed, that if you will graft a white Roſe upon a Broom-ſtalke, or

or on a Furzon buſh, that the ſame wil bear yellow Roſes, but they wil have no ſweet ſent.

Alſo, if you wil graft a Roſe, or other thing upon a Holly-ſtock, the leaves of the ſame wil grow green all the yeare.

RECEIT LVI.

How to make Apples, Peares, and other Fruit of ſeverall colours, and to give them a dainty taſte of Spices.

IF you wil give a pleaſant colour to your Fruit, doe thus: For a red, boyle Braſil, Turneſoyle, or Sanders; and for a yellow, uſe Saffron, or Turmericke: Now to give them a dainty taſte and ſmell, you muſt beat Cloves, Mace, Cinamon, and Nutmegs to powder, and mixe them with the water of your colours with ſome honey; then with an auger bore a hole in the biggeſt part of the tree, unto the middle, ſomething ſloping down-wards, and then poure your water and ſpices into the hole, then with a pin made of the ſame wood, or tree, beat it hard into the hole, and ſaw off the end, and

wax it about: This muſt be done in Winter before the Spring, becauſe when the ſap riſeth, the colour, ſcent, and taſte alſo, aſcendeth with the ſame.

RECEIT LVII.

How to know preciſely on the Seeling of a Chamber, which way the wind blowes at all times.

THis conceit did I ſee in King *James* his Bed-chamber at White-hal; the chamber was an upper Roome, having a Vane or Weather-cock of Iron placed about the top, or tyles of the houſe, which had a long ſtem of Iron, which did reach from thence through the Seeling of the chamber, upon which Seeling was pointed a Mariners compaſſe, with the two and thirty winds thereon; now the lower end of the ſtem of the Vane came through the center of the compaſſe, unto which was faſtened an index or needle (like to thoſe in an ordinary Dial) which doth preſently ſhew how the various wind doth ſhift from place to place, which you may continually know preciſely, both night and day.

RE-

RECEIT LVIII.

How to keep drinke quick and freſh, that beginneth to be ſower and dead.

IT is good to put a handful or two of ground Malt into your veſſel (if it begin to faile) and ſtir the Drinke and the Malt wel together, and this wil make it to worke afreſh, and become good againe; likewiſe, if you adde new ſtrong drinke to the old, the dead drinke is forced for to worke againe to a new head. Some doe bury their veſſel of drinke in the ground for foure and twenty houres, and thereby recover it. Others doe throw into the veſſel a handful of Salt; it is alſo good to tilt your veſſel before your drink be halfe out, and then it wil draw freſh to the latter end. But the beſt way is to put a handful, or more, of Oat-meale into your veſſel, when it is firſt laid into the Seller, or Buttery, whereby it wil alwayes carry a quicke and lively taſte.

RECEIT LIX.

An excellent way for baking of Bread, that it ſhall not be hard cruſted, nor yeeld ſo many crums.

GOe to the Plate-worker, (ſuch as maketh ordinary Dripping-pans,) and cauſe him to make a Pot, or Pots of his Latten plate, which may containe halfe a peck, or greater, or leſſe, as you pleaſe, according as you meane the bigneſſe of your Loaf ſhal be; let this Pot be made with a bottome at the lower end, and open at the top, almoſt like a Beaker, as you may ſee here by this Figure; and when it is done, take a little Butter, and annoynt the inſide of the Pot there-with, and when your Dow is moulded put it into the ſame, (not full to the top,) and thruſt it down hard to the bottome, and then ſet it into an Oven amongſt other bread, with the leſſer end downward; and when it is baked it will eaſily

come

come out; this Loaf wil have no hard cruſt, nor crumble as other Loaves doe, and wil ſhew ſmooth, ſtanding like a Suger-loaf upon the Table, and in a little compaſſe.

RECEIT LX.

A dainty, ſtrong, and gliſtering Morter, or Plaiſtering for Seelings, or for Wals.

IT is ſaid, that in *Italy* they much uſe this Conceit for the Plaiſtering of their Seelings, Floors, or Wals, which is by mixing and wel tempering together Oxen and Cows bloud with fine Loam or Clay, and it wil be a very ſtrong and binding ſubſtance, and being wel ſmoothed it wil gliſter, and become very hard.

Some few (but choyce) Phyſicall Receits, &c.

RECEIT LXI.

Of the great vertues of Crocum Martis, *fit to be uſed at this time for the Bloudy-flux, which ſo much now reigneth in the Army.*

THis *Crocum Martis*, is a powder which you may have at the Apothecaries; this a-

mongſt all other Medicines in the world, is the moſt excellent that can be found againſt the Bloudy-flux, giving it in this order. Take an ounce of Conſerve of Roſes, and one ſcruple of *Crocum Martis*, and mixe them together, then let the Patient eate it in the morning, and faſt thereon two houres, and this (by the Grace of God) wil helpe him, although he had it never ſo long, or never ſo ſore. It is alſo given above all other Medicines, in the latter end of a Dropſie; and alſo againſt the Flux of Menſtrues, and againſt bleeding at the Noſe, and all other Fluxes whatſoever; it helpeth thoſe that ſpit bloud, it is excellent to ſtop the Flux in Wounds, and to heale them, and dry them, if yee ſtrew the powder thereon.

RECEIT

RECEIT LXII.

Of the rare vertue and operation of the Quinteſſence of Honey, for many Diſeaſes, with the Oyle of Wax.

YOu muſt underſtand, that Honey is rather a liquor Divine, then Humane, becauſe it falleth from Heaven, upon Hearbs and Flowers, and is ſuch a ſweet thing, that the like cannot be found upon the earth; this Quinteſſence is of ſuch vertue, that if any be almoſt dead, and drink two or three Drams thereof, he wil preſently recover. If you waſh any wound therewith, or other ſore, it wil quickly heale. It is excellent againſt the Cough, Catar, or paine of the Milt, and many other Diſeaſes; it helpeth the Falling-ſickneſſe, the Palſie, and preſerveth the body from putrifaction.

The oyle of Wax worketh in wounds moſt miraculouſly, healing them, be the ſame never ſo big and wide, (being before wide ſtitched up,) in the ſpace of eleven or twelve dayes; but ſmaller wounds in three or foure dayes, by anoynting the ſame therewith, and laying a cloath thereon wet in the ſame. Moreover, for inward Diſeaſes it is excellent;

It

It provoketh Urine which is ſtopped; it helpeth ſtitches, and paine in the loynes, if you drinke one dram thereof in white Wine, it helpeth the cold Gout, or Sciatica, and all other griefes coming of cold.

RECEIT. LXIII.

Of the manifold operations of the Oyle of Cinamon.

THis Oyle is of a miraculous nature, for it pierceth through the fleſh and bones, being very hot and dry, and is good againſt all cold and moiſt diſeaſes, being comfortable for the head and heart, working the ſame operation on a dying man as the former. To be ſhort, this oyle is of ſuch operation and vertue, that if a man drinke never ſo little, he ſhall feele it worke to his fingers and toes ends; therefore it pierceth through the whole body, helping all Diſeaſes that come of cold and flegmatick humours, it availeth much with Women in travell, it driveth away the Meaſels and ſpots, if the face and hands be anoynted there-with; it warmeth the breaſt, and helps the cold Cough, it conſumes all cold Fluxes that proceed from braine

braine and head, and cauſeth quiet ſleep. In briefe, this Oyle may be uſed inſtead of the naturall Balme for many diſeaſes.

RECEIT LXIV.

How to Diſtill, and make Oyle of Roſemary Flowers, with its vertue.

TAke Roſe-mary flowers and ſtampe them, then put them into a glaſſe with ſtrong wine, and ſtop it cloſe, ſetting it in the Sun for five or ſix dayes, and then diſtill it with a ſoft fire, and you ſhal have both water and oyle, which you muſt ſeparate, keeping the oyle cloſe in a glaſſe, whoſe vertues are theſe.

It helpeth againſt all paines in the Head, although they have continued ſeven yeares, it comforteth the memory, and alſo preſerveth the eyes, if you drinke now and then a drop or two, and put another into the eyes; it helpeth thoſe that are deaf, if it be put into the ears, and alſo drunk with good wine; it openeth all ſtoppings of the Liver and Milt, and helpeth againſt the Dropſie, and yellow Jaundiſe, it breaketh Wind, and eaſeth Cholick, and riſing of the Mother; it is alſo excellent againſt the Peſtilence, or thoſe which have

have drunk poyſon, if they drinke of this Oyle, and lay them downe to ſweat: It comforteth the heart, and cleanſeth the blood, and maketh a man merry, and cauſeth a good colour: It helpeth thoſe that have the Canker and Fiſtula, and ſuch like. And to be briefe, it helpeth all the diſeaſes of the body that come of cold and moyſt humours, although they were never ſo evil.

RECEIT LXV.

How to help Deafneſſe, and to expell wind from the Head.

TAke five or ſix drops, or more, of the Spirit of Wine, or good Aquavitæ in a ſpoone, and holding downe your head on one ſide, let one poure the ſame into your Eare; let it continue there about the ſpace of halfe a quarter of an houre, ſtill holding your head aſide that it run not out; and then you ſhal heare a moſt terrible noyſe and rumbling in your head, which is the wind; then turn your head aſide, & the water wil run all out againe very hot: Now when you have done thus much on one ſide, you may doe as much on the other; but be ſure to keep your head warme

warme after you have done. This I have often proved, and found eaſe thereby.

RECEIT LVI.

How to give eaſe, and helpe the raging paine of the teeth, without drawing.

THis is alſo performed with the ſpirit of Wine, or good Aquavitæ (as you have read in the former Receit) by pouring it into the eares, eſpecially on that ſide where your paine lieth; but after that you have let the water run forth of your eares, then with more of the ſame water (againſt the fire) you muſt rub and chafe your cheeks, an dunder your jaws, and behind your ears, ſtroking of them upwards with your hands toward the neck, to drive back the humours; for it is nothing elſe but a cold rheume that diſtilleth from the head into the gums which cauſeth the paine; therefore be ſure to keep the head very warme when you have done.

I have been certified (but how true it is I know not) that three teeth taken out of a dead mans skul, and ſowed in a clout, or peece of Leather, and worne about them, which

which were much ſubject to the Tooth-ach, it gave them preſent eaſe, and they never were troubled with the ſame ſo long as they had thoſe teeth about them.

RECEIT LXVII.

A dainty Receit for curious Artiſts, or others, to ſtrengthen and comfort the eyes.

THis Receit I had of a curious Ingraver, and my Friend, who every morning before he went to worke, in the corner of his Handkercher, (or a clean linnen Rag) did put a few drops of Aqua-vitæ, and with the ſame did wipe the corners of his eyes, eye-browes, and temples, which did keepe backe the Rheume, and greatly did ſtrengthen and comfort the eyes; of which I have often made triall, and found much comfort.

RECEIT LXVIII.

Of Fractures, which are bones broken; and alſo of Diſlocations, or joynts diſplaced, with their cure.

MAny times it happeneth that Leggs, Armes, and Fingers are broken, or out of

of joynt, and the Party ſo hurt is voyd of help, by reaſon they have no Chirurgion neare them; therefore for the relief of ſuch perſons, I have here ſet down ſome directions by which they may be eaſed of their paine: But I would not wiſh them to truſt to too much of their owne skil, if they have any expert Chirurgion neare hand to doe it.

If a Legge, or an Arme be broken, then have a care to place the Member in the ſame manner as it was before, which you ſhal doe in this manner.

Take a Towel, and make it faſt above the place where it is broken, and then take another Towel, and faſten it underneath the place where it is broken, then cauſe two men to pull thoſe two Towels, that they may thereby extend, or ſtretch out the Member; and when the Member is ſtretched forth at length, place the broken bones as they were at the firſt, and ſo by little and little let them ſlack their pulling; then have a cloath ready, ſo big that it may compaſſe the whole Member, wet this cloath in whites of Eggs, and Oyle of Roſes mingled together, and lay it on the grieved part; then roule it about with a linnen Rouler of foure fingers broad, and two yards long, wet the Rouler in vvater,

and

and vinegar mingled together: Firſt, roule it about the fracture three or four times, then downward, and then upward, and ſo faſten it; then roule it with another Rouler, in the ſame manner; on theſe place thin ſplints of light wood, armed wel with tow, one fingers breadth from each other, and bind them on with tape, then place the member on ſome ſoft Pillow for twenty dayes; but if a paineful itch doe ariſe, open and foment the place with warme water, and then annoint it with *Unguentum Album*, and roule it up againe.

If that a Finger be broken, roule it with a convenient Rouler, and ſplint it, and uſe the meanes aforeſaid.

RECEIT LXIX.

A precious Salve for all thoſe that have had any member out of joynt, called Jeremy of Brunſwicks *Salve.*

THis famous Chirurgion, with this Salve, hath healed thoſe that had formerly their members out of joynt, or thoſe that had been wounded, and could not ſtirre or bow the member where they had the hurt; for by this

this Salve did he bring many ſtiffe and crooked Joynts againe to their former ſtrength, to the great admiration of all men, both Chirurgions and others.

How to make the Salve.

Take two ounces of old Hogſ-greaſe, and of Ducks-greaſe, and Gooſe-greaſe, Hens or Capons-greaſe, of each two ounces: Linſeed-meale, Fenegreek-meale, of each two ounces, Oyle-olive eight ounces; Oppoponax, Maſtick and Frankincenſe, of each an ounce; diſſolve the Gums in white wine (that are to be diſſolved) and powder the other, mingle them all together, and adde wax and turpentine to them, then boyle them all together with good ſtirring.

RECEIT LXX.

How to order and dreſſe a wound, when it is firſt hurt, with their remedy.

FIrſt remove all ſuch things as are in the wound, as clotted bloud, wood, iron, or the like; then dry the bloud with a cloath or ſpunge, and waſh it with cold white wine, and apply ſome unguents or Balmes to the ſame, and on that a plaiſter fit for a wound;

then roule it gently, and in good forme, for that helpeth to haſten the cure.

If the wound be of any length, you may ſtitch it in three or more places, but be ſure for to leave a place at the lower part thereof, for to purge it ſelfe thereby.

RECEIT LXXI.

An excellent Unguent, or Liniment for greene Wounds, eſpecially for thoſe in the head.

TAke of the beſt Turpentine an ounce and a halfe, and as much of Gum Elemi, of Capons greaſe an ounce; melt theſe at the fire, and mingle them. When you uſe it, melt it, and annoynt the edges of the wound, and dip a pledget of lint in it, and apply it to the wound, and then lay a plaiſter on the top of the ſame, and roule it gently.

RE-

RECEIT LXXII.

How to make a ſoveraigne Oyle, or Balme for all Wounds, ſimple, or confuſed.

TAke three pound of common Oyle, two pound of Turpentine, Wheat that is cleanſed five ounces, Saint-Johns wort a pound, Valerian, Cardus Benedictus, of each fourteen ounces; bruiſe the Hearbs, and infuſe them in white wine ſix or eight houres, then put thereto the Wheat and Oyle, and boyle them on an eaſie fire, till the wine be conſumed: then ſtraine them, and put the Turpentine in, and then boyle them againe on a ſoft fire to perfection.

RECEIT LXXIII.

An excellent Emplaiſter, which is good for all Wounds, or Ulcers.

TAke Deers ſuet foure ounces, Roſin, and Perroſin, of each a pound and a halfe, white Wax and Frankincenſe, of each foure ounces, Maſtick an ounce; melt the Wax and

ſuet, and powder the Gums, and put them together, and when they be melted, ſtraine them through a peece of Canvaſſe; then adde to them a pottle of white wine, and boyl them all to the conſumption of the wine, with continuall ſtirring, and then take it from the fire, and when it is almoſt cold, put thereto foure ounces of turpentine waſhed in white wine, and of campher powdered two ounces; then make roules of it, and keep it for your uſe.

RECEIT LXXIIII.

Another excellent Plaiſter for Wounds in the Breſt, or other parts.

TAke Roſin that is freſh, cleare, and ſweet, a pound, Oyle of Bayes, and turpentine, of each two ounces; Gum Elemni ſweet and good foure ounces; melt the Roſin and Gum together, and ſtirre them well, then put in the Oyle and Turpentine, and let it boyle, with continuall ſtirring, and then ſtraine it, and reſerve it for your uſe in a cloſe pot.

When you uſe it, ſpread it on a piece of leather, bigger then the wound by three fingers

gers breadth, and make a hole in the middle of the leather for the corruption to runne forth; this doth it without tent or pledget: dreſſe it twice a day in the Summer, and once a day in the winter.

This Plaiſter is good for all wounds in the breaſt, or other parts, for it draweth the hollow parts of all wounds, and ſtrengtheneth the parts, clearing them from unnaturall matter, and dryeth all wounds cauſed by thruſts.

RECEIT LXXV.

Of the generall ſignifications of ſickneſſes, either preſent, or neere at hand.

THeſe following Preſages and tokens of ſickneſſes, are worth the obſervation of all men; Firſt, to prepare themſelves for God, if he be pleaſed to call them; otherwiſe that they may in time, before they may be too much ſpent, have the counſell and helpe of learned and expert Phyſicians.

Signes of Sickneſſe are theſe.

If the Body be hotter, colder, moyſter, dryer, leaner, or fatter, or the colour more pale, or more ſwartiſh, or the eyes more hol-

low then they were accuſtomed to be, and on the ſudden change; all theſe are certaine forerunners and meſſengers, that the body is diſpoſed to ſickneſſe, or already ſick.

RECEIT LXXVI.

Of the ſignification of the ſeverall colours of ſome Urines.

THe Colours and Symptoms of Urines are many and various, as are the Diſeaſes; and therefore ought to be judged on by the learned: but thus much in briefe.

Red and thick urine, betokeneth ſanguin.

Red and thin, betokeneth melancholly.

White and thick, ſignifieth flegme.

White and thin, betokeneth melancholly.

The highneſſe of the colour ſignifieth heat, but the pale, black, or green, betokeneth cold.

Alſo, the groſneſſe, or thickneſſe of the Urine ſignifieth moyſture; the clearneſſe, or thinneſſe, dryneſſe.

Urine of the colour of bright Gold, or of the colour of Gilt, ſignifieth perfect digeſtion, or health.

Red as a red Apple, or Cherry, or baſe red like

like Bole Armoniack, or red like glowing fire, betokeneth exceſſe of digeſtion.

Cleare and white like water, or gray as a horne, or white like whey; or the colour of a Camels haire, ſignifieth lack of digeſtion.

Pale, like to broth, or fleſh ſodden, betokeneth the beginning of digeſtion.

Citrine colour, or yellow, or ſubcitrine, or paler, ſignifieth the middle of digeſtion.

Colour of a Beaſts liver, or of darke wine, or green like to Coleworts, ſheweth aduſtion of humours.

Urine of a leady colour, or black as inke, or black as horne, or darke above, and cleare beneath, betokeneth feebleneſſe of nature, mortification, and death.

FINIS.

The Schoole of Artificiall Fire-workes.

FIRST:

The order and making in a true proportion all ſorts of Moulds for Fire-works.

BEfore you proceed to the make-ing of Rockets for Fire-works, it is requiſite to under-ſtand how to order, and make your Moulds and other Inſtru-ments for the ſame: and firſt for your Moulds; You muſt provide a peece of good dry Box, Holly, Walnut-tree, Crab-tree, or ſome ſuch like tough wood, without ſhakes or knots; and when you have thus done, it is fit to know of what length and breadth you deſire to have your Mould; for following this kinde of proportion, all other ſorts of Moulds are made great and ſmall; therefore you ought

ought to have a Turner to turn and bore the ſame :) as for example ; If I would have the hole of a Mould bored but an inch diameter, or wide, then the length of the Mould muſt be ſix times ſo long as the hole is wide (which is ſix inches) and on each ſide of the hole half an inch thick : So that when the Mould is turned round, it is two inches over in breadth. When you have done this, you muſt have a bottome made, and is to be fitted in this manner, as is deſcribed by the Letters in the Figure following.

A. Is the foot of the Mould, and muſt be in height two inches, and muſt be in breadth an inch and a quarter, whether it be ſquare or round.

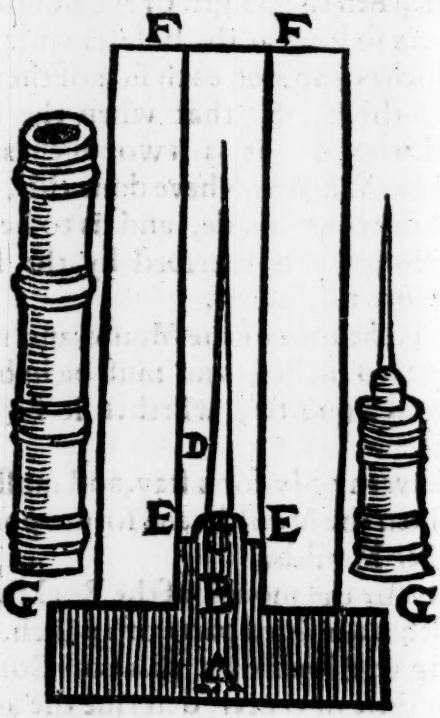
B. Serveth only for a ſtay, and muſt ariſe one inch into the Mould, and ſo proportional in all other Moulds.

C. Is for the mouth of the Rocket, and is in breadth two third parts of an inch, and then ſetting one foot of a paire of Compaſſes in the middle or center, deſcribe the arch, which is the full height required.

D. Is the length and bigneſſe of the Needle, which is two third parts the length of the Mould ; and the bigneſſe of the bottome one ſixth part the breadth of the bore, and taper toward the top.

E. E. Ser-

E. E. Serveth for the Paper being rouled, and muſt be one ſixth part of the breadth on each ſide.



F. F. Is the thickneſſe of the Mould, which is halfe the breadth of the Bore, that is in this Mould halfe an inch.

F. G. Is the length of the Mould, which is ſix times the breadth.

2. *The*

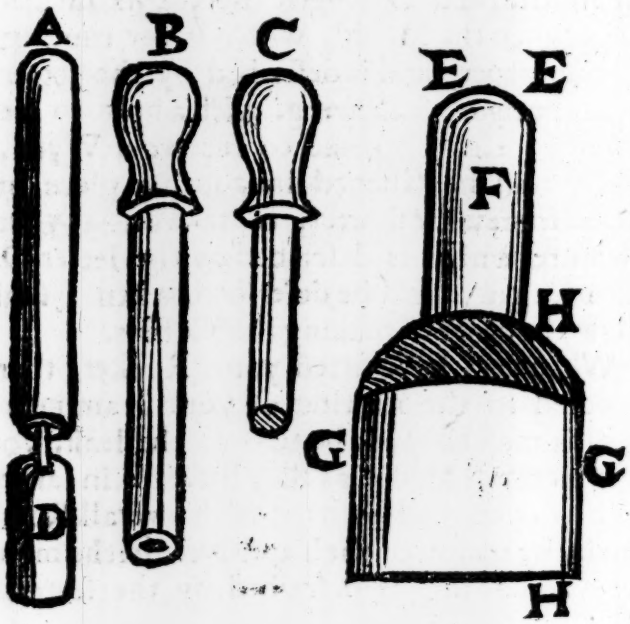
2. *The order and making of Rowlers, Rammers, and other things for the Coffins.*

HAving provided your Mould, then you are to fit your Rowler, which muſt be two third parts of the breadth of the bore of the Mould, and the length thereof ſix inches longer then the Mould, which is for rouling of your paper, and is deſcribed by the letter A. in the figure following, with a hole to be bored in the bottome to receive a Wyre, which muſt be faſtened in another piece of wood ſomewhat ſhorter, to take out at your pleaſure, which is deſcribed by the letter D. the uſe thereof ſhal be deſcribed, when I ſhal ſhew the order of making the Coffins.

When you have fitted your Rocket, then proceed to the making of your Rammers, which muſt alwayes be two at the leaſt, for each ſeverall Mould as they increaſe in largeneſſe, ſo you muſt be fitted with ſeverall Rammers, by reaſon of the Taper Needle: the manner and forme is deſcribed by the letters, B. C. in the Figure following.

B. Is the hollow Rammer, and hath a hole in it anſwerable to the length and bigneſſe

neſſe of the Taper Needle; it muſt be a ſmall matter leſſe then the Rowler, becauſe that otherwiſe in putting it in, you wil put downe the Paper. The other Rammer is not halfe ſo long, and is ſad, that when you have beaten to the top of the Needle, you may make uſe of this, which is marked with the letter C.



Having

Having fitted your Rammers, provide a piece of Box made after the forme as you ſee deſcribed by the letter F. which muſt ſerve to make your large Coffins, to put the worke which you intend, on the head of your Rockets.

E. E. Sheweth the breadth, which is the juſt bigneſſe of the Rocket, and muſt be ſo in all ſizes.

G. G. Deſcribeth the largeneſſe of the Coffin, and muſt be twice the breadth.

The Letters H. H. ſheweth the length of the Coffin, which ought to be twice the breadth of the Rocket; but you are not tyed to that ſo preciſely, becauſe you may alter that according to the work which you put therein.

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3. *How*

3. *How to order, and make the Coffins of Paper,*

HAving explained the manner and forme of the Moulds, with the other things belonging to the ſame; I wil now ſhew the uſe of them in their ſeverall Orders; and firſt for the uſe of the Rowler, deſcribed by the Letter A. in the Figure before.

Provide you ſome good large ſtrong Paper for your work; and to know what length your Paper muſt be, let it be alwayes the length of your Mould; ſo ſhal you have one breadth left above the Mould, the uſe whereof ſhall be ſhewed hereafter. Now having provided your Paper in length ready, take your Rowler, and one length of Paper, and begin to roule; when you have rouled one ſheete, you muſt have a board with a handle to roule it with, (the board is marked in the Figure following with the Letter B.) which muſt be done in this manner: You muſt hold the Rowler in your left hand, and with your right hand hold the board by the handle, and then lay down your Rowler upon ſome ſmooth Cheſt, or Table; which when you have done, roule another length of

of Paper, and ſo proceed in rouling between every ſheet, until you have rouled on ſo much, as wil fil the Mould very ſtreight. When you have thus done, draw forth the Rowler about an inch, and then take the other ſhort Rowler, which is marked with the letter D. in the other Figure, and put it in as you ſee deſcribed; and there you ſhal have a place left for the choaking of the Rocket, of which is next following.

4. *The order and manner how you ſhall choake a Rocket.*

WHen you are to 'choak a Rocket, you muſt have an Iron hooke, or a ſtaple driven into ſome poſt, to which you muſt faſten your cord, which muſt be bigger or leſs, according to the bigneſſe of your Rocket, by reaſon that a ſmall cord wil not choake a great Rocket for want of ſtrength, and a great cord wil not ſerve for a ſmall one, in regard that it wil make too great a choaking, ſo that you muſt have a bigger and a leſſe; and when you have ſo done, you muſt tye one end of the cord to the hooke or ſtaple, and at the other end, about a yard off, tye a ſtrong ſtick, in faſhion of a ſwing; it muſt be ſtrong, becauſe it beareth the weight of the body, (as you may ſee in the Figure following, marked with the Letter K) which when you have provided, put the ſtick between your legges, and wind the cord about the Rocket-caſe in the place appointed, which muſt be between the long Rowler and the ſhort; when that is done, girt it by degrees, ever turning the Rowler, to the end it may come together more

more cloſe and neate; and when you have ſufficiently choaked it, draw forth your ſhort Rowler, and where the choaking is, tye it about with ſtrong Pack-thread, and then draw forth the Rowler, your Coffin is ready to be filled when occaſion ſerveth, the form whereof followeth, by this letter A.

5. *The manner of driving a Rocket, with the Inſtruments belonging thereto.*

YOur Coffin of Paper being finiſhed, take it, and with your hollow Rammer, force

the ſame downe cloſe into the Mould; and when you have done, ſtrike two or theee hard blowes to ſettle the Paper into his right forme: Which being done, then you muſt fill the Coffin, in doing whereof, you muſt have a care, providing a meaſure, which may containe but the twentieth part of your whole Rocket; ſo by that meanes you ſhall not faile, but every Rocket ſhal have a true proportion alike: as for example; I have a Coffin, which being filled, wil hold an ounce of mixture, or thereabouts; then I take the twentieth part, and when I find what quantity it is, I make a meaſure of Horne or Lattin marked with the Letter F. which ſhall containe ſo much; and then I begin to fill my Coffin with one meaſure at a time, and putting in my Rammer, I ſtrike foure or five ſmart blowes with a good heavie Mallet; and then I fill another meaſure, and ſtrike againe; ſo I continue till I come to the top of the Needle; then I take the ſaid Rammer, and ſo continue with it, till I come to the top of the Mould: Now the Paper which is above the top of the Mould, muſt be turned downe, and beaten hard; which being done, the Rocket is finiſhed from the Mould, which being forced out with as much eaſe as you can, for the

leſſe

leſſe you force it, (being filled, and the Needle taken out,) the better it is, for knocking looſens the Powder, and ſo cauſes the Rocket for to faile. You ſhould have a Funnel to fill your ſmall Rockets, which is marked with the Letter G.

6 *Of the Compoſition and Receits for your Rockets.*

HAving thus finiſhed your Rockets, it now reſts to know the Receits: For in the making of them, the chiefeſt thing to be

regardedis, the compoſition that they ought to be filled withall; for as much as that which is proper to Rockets which are of a leſſe ſort, is very improper to thoſe which are of a greater ſize; for the Fire being lighted in a great Concave, which is filled with a quick compoſition, burnes with great violence, and ſo contrary, a weake compoſition being placed into a ſmall Concave, maketh no effect: Therefore we ſhall here deliver rules and directions, which may ſerve for the true compoſition, or matter where-with you may charge any Rocket, from Rockets which are charged but with one ounce of powder, unto greater, which requireth for their charge ten pound of powder: And here followeth the Ingrediences for ſeverall Rockets.

Firſt, for Rockets of one ounce.

Unto each pound of good Musket powder beaten, put two ounces of ſmall Cole-duſt, and with this charge the Rocket.

For Rockets of two or three ounces.

Unto every foure ounces and a halfe of powder-duſt, adde an ounce of Salt-peter; or to every foure ounces of powder-duſt, adde an ounce of Cole-duſt.

For Rockets of foure ounces.

Unto every pound of Powder-duſt, adde

foure

foure ounces of Salt-peter, and an ounce of Coal-duſt; but to have it more ſlow, unto every ten ounces of good Powder-duſt, adde three ounces of Salt-peter, and three ounces of Coal-duſt.

For Rockets of five or ſix ounces.

Unto every pound of Powder-duſt, adde three ounces and a half of Salt-peter, and two ounces and a half of Coal-duſt, and an ounce of Sulphur, and an ounce of File-duſt.

For Rockets of ſeven or eight ounces.

Unto every pound of Powder-duſt, adde four ounces of Salt-peter, and three ounces of Sulphur.

For Rockets of ten or twelve ounces.

Unto the former Ingredients, adde half an ounce of Sulphur, and it wil be ſufficient.

For Rockets of Fourteene, and Sixteen ounces.

Unto every pound of Powder-duſt, adde foure ounces of Salt-peter, of Coal-duſt two ounces and a quarter; of Sulphur and File-duſt, an ounce and a quarter.

For Rockets of one pound.

Unto every pound of Powder-duſt, adde three ounces of Coal-duſt, and an ounce of Sulphur.

For Rockets of two pound.

Unto every pound of Powder duſt, adde nine ounces and a half of Salt-peter, of Coal-duſt, two ounces and a halfe, of File-duſt, one ounce and a halfe, and of Sulphur, three quarters of an ounce.

For Rockets of three pound.

Unto every pound of Salt-peter, adde ſix ounces of Coal-duſt, and of Sulphur foure ounces.

For Rockets of foure, five, ſix, or ſeven pound.

Unto each pound of Salt-peter, adde five ounces of Coal-duſt, and of Sulphur two ounces and a halfe.

For Rockets of eight, nine, or ten pound.

Unto every pound of Salt-peter, adde five ounces and a halfe of Coal-duſt, and of Sulphur two ounces and a halfe.

Here note, that in all great Rockets there is no Powder put, becauſe of the greatneſſe of the Fire, which is lighted at once, which cauſeth too great a violence, and therefore ought to be filled with a more weake compoſition.

Now when you have provided your Powder, you muſt firſt meale it, and then ſearce it, ſo

o that it may be free from any corne, though never ſo ſmall. Likewiſe take good dry coale, wel burnt, and beat it to duſt, ſearcing it very fine, which when you have done, mixe them according as your occaſion requireth, and following your directions.

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7. *The manner of heading a Rocket, with the order of capping it.*

IN the manner of heading a Rocket, you muſt uſe the thick Rowler, which you may ſee deſcribed by the Letter F. in the ſecond Figure; upon which you muſt roule ſome Paper, or fine Paſt-board, and paſt it ſo that it may be very cloſe, and then choake it at the length of the thicker part, ſo that it may come cloſe to your ſticke in the leſſer part, which will be fit to be tyed to the top of the Rocket; ſo ſhal you have a Coffin to put in your workes, which muſt be of divers ſorts. This being done, you muſt provide taper Caps, which muſt be adjoyned to the top of the large Coffin: The uſe of them is to keep in your workes, and to cauſe them to pierce the Ayre more ſwifter. The manner of making theſe Caps, is to take a paire

of Compaſſes, and deſcribe a circle in Paſt-board, then cut it out with a paire of Sheeres, and that wil make two caps, being cut in the middle, and turned one corner under the other, and ſo paſted; and let them ſo paſted, be put in a Napkin-preſſe till they be dry, and when they are dry, cut out a halfe circle in Paper, which ſhall fit round about the ſaid cap, and ſhall ſerve to paſt on the cap to the Coffin: So you have all things ready to the finiſhing of your Rocket, which muſt be done in the manner which followeth. R. in the next Figure, is the Crackers faſtned to the top of the Rocket: S. is the cap, T. is the Fiſgigs finiſhed; H. is the ſtick tyed to the Rocket.

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8. *The manner of finiſhing a Rocket.*

HAving driven your Rocket, as I have ſhewed, with the Paper turned downe, you muſt firſt prime it, which muſt be with Cotten-wick made for that purpoſe, which you muſt put into the vent, leaving a peece to hang lower then the mouth of the Rocket by three or foure inches; which being done, tye a peice of Paper over the mouth,

that

that it may not fall out. Now having primed your Rocket, you may proceed to the heading of it, and that is done after this manner.

Take your Rocket, and on the head you ſhould turne down the Paper, you muſt with a Bodkin pierce two or three holes, that when the Rocket hath ſpent it ſelfe, the workes which are in the head may take fire; which holes prime with a little Powder-duſt, and then put on the head, with the choaking fitted to your Rocket, which muſt come over the ſame in ſuch manner, that the bottome of the greater part muſt come even with the top of the Rocket; which tye faſt to the Rocket with thread, and then put in your workes; But before you put in your workes, whether they be Starres, or any other workes, you muſt put in a little Cotten-wool, being rouled in Powder-duſt, to make your Starres to take fire, or likewiſe may blow out: Having thus done, put in your Starres, or other workes, and if you make more then one tire, (as you may doe of your Starres,) then you muſt put more Cotten rouled in Powder-duſt among them, or between every tire, that they may all take fire; then take your Cap, and fill the hollow place with Cotten, becauſe

becauſe it is light, and likewiſe wil fire quickly; which being fitted, paſte it cloſe to the top of the Coffin, that it may ſtand upright; then muſt you fit your ſticke, for the poyſing of your Rocket, which ought to be eight times the length of the Rocket without the head: You muſt get the ſmootheſt and lighteſt you can, ſuch as Basket-makers uſe, and then cut one ſide of it flat at the great end, then make two notches on the round ſide, that the one be differing from the other, ſo much as is between the choaking of your Rocket, and the end of the Vent, for if you ſhould tye it upon the Vent, it would looſen the Powder, cauſing it to breake in the Firing: Be carefull that you tye not the wrong end of the Rocket uppermoſt, but tye that end downward which is choaked, and with a piece of thread that is ſtrong, tye it to the lower notch about the choaking. When you have tyed that, then tye the other higher, and let the ſticke come even with the top of the Rocket, the manner whereof is ſhewed in the next figure, by the letter G. Then poyſe your Rocket, by laying it on your finger two or three inches from the mouth; and if you finde the ſtick be too heavie, cut it ſhorter, till you finde your Rocket to ballance your ſtick,

for

for if the ſtick be too heavie, the Rocket will be ſlug, and being too light, the Rocket wil fall before it be halfe up. Theſe things being provided, you have your Rocket ready to be fired, which muſt bee after this manner following.

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9. *The manner of firing Rockets, with the deſcription of a Staffe for the ſame.*

YOu muſt provide a long Staffe with a Pike at one end, to bee thruſt hard into the ground, with a three-legged ſtaffe, having a hollow hoope at the top, to let this long ſtaffe ſlide up and down, to the end that having Rockets, whoſe ſticks are longer then the ſtaffe, yet by raiſing it through the ſaid Iron hoope, you may make it foure or five foote longer then it would be, ſtanding on the ground. Now this long ſtaffe muſt have a ſliding piece cut with ſeverall points, which muſt be neare the top; and at the bottome there muſt be a ring of Wyer, to let the ſticke goe through; which muſt be made likewiſe to ſlide up and down, ſo thruſting the ſmall end through the ſaid ring, your Rocket wil reſt upon that part above, which muſt be juſt oppoſite

oppoſite in a ſtreight line; ſo open the mouth of your Rocket, and pull out the end of your Cotten-wick, and with a piece of Match faſtened in a Linſtock, give fire to the wick, and by degrees you ſhal ſee it fire your Rocket; which ordered well, will mount very ſtreight and high. Thus having ſhewed the whole order of compoſing a Rocket, with firing of the ſame, I wil in the next place ſhew you the order for making of Starres, and other workes, which are neceſſary for the heads of your Rockets. The Figure of the Rocket, and the ſtaffe are here preſented.

The Letter G. is the Rocket with the long ſtick.

A. The long Staffe to riſe thorow the Ring.

B. B. B. The three-legged Staffe.

C. The Ring or Hoope of Iron, for the long ſtaffe to ſlide thorow.

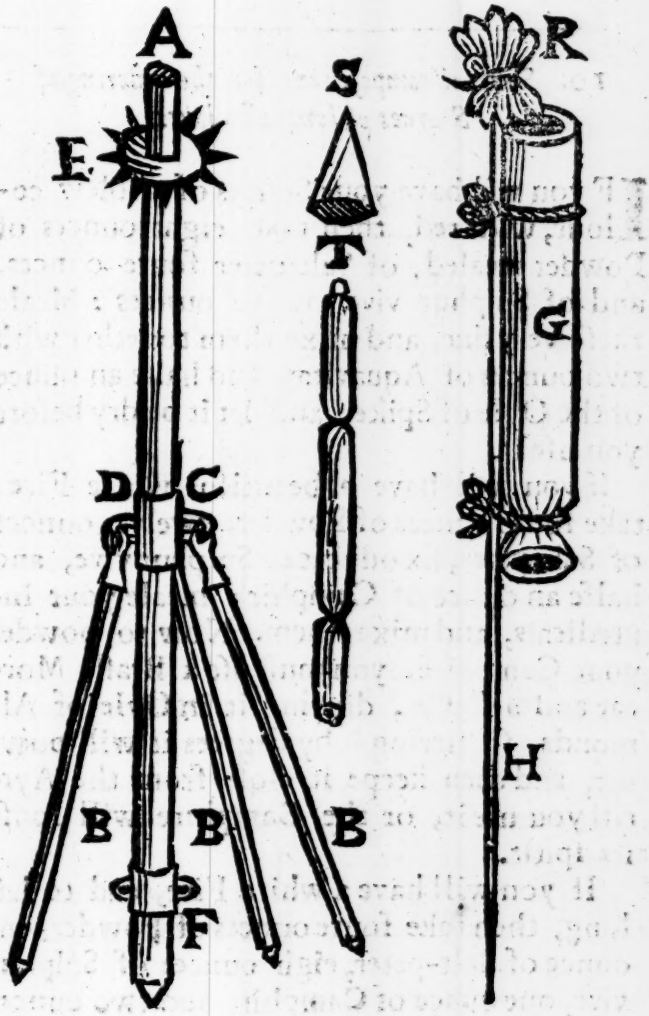
D. The Screw to faſten to the long ſtaffe being raiſed.

E. A piece of Iron filed with notches to hang the Rocket on.

F. The Ring of Wyre to put thorow the ſtick, to be raiſed higher or lower.

G. Is the Rocket.

H. The long ſtick.


A
E
S
T
R
G
D
C
H
B
B
B
F

10. *Severall compoſitions for the ordering of Starres of ſeverall colours.*

IF you wil have your Starres of a blew colour, with red, then take eight ounces of Powder mealed, of Salt-peter foure ounces, and of Sulphur vive twelve ounces: Meale theſe very fine, and mixe them together with two ounces of Aquavitæ, and halfe an ounce of the Oyle of Spike, and let it be dry before you uſe it.

If you wil have a beautiful white Fire; take foure ounces of Powder, twelve ounces of Salt-peter, ſix ounces of Sulphur vive, and halfe an ounce of Camphir; meale your Ingredients, and mixe them. Now to powder your Camphire, you muſt uſe a Braſſe Mortar and a Peſtle, dipping it in Oyle of Almonds, ſo ſtirring it by degrees it will powder, and then keepe it cloſe from the Ayre till you uſe it, or the Camphire will looſe its ſpirit.

If you will have a white Fire, and to laſt long, then take foure ounces of Powder, one ounce of Salt-peter, eight ounces of Sulphur vive, one ounce of Camphir, and two ounces of

of Oyle of Peter: Meale thoſe which are to be mealed very fine, and mixe them according to the former directions.

11. *The order and manner of making the beſt ſort of Starres.*

HAving ſhewed the Compoſitions for Starres, now I will ſhew you how to make them, which is thus: You muſt make little ſquare pieces of browne paper, which fill with your compoſition, and ſo double it downe, rouling it till you make it ſomewhat round, about the bigneſſe of a Nut, or bigger, according to the ſize of the Rocket, you may put in a dozen on the head of a ſmall Rocket, binding them round with a thread, and then draw a cotten wick thorow them, being prepared for priming.

Alſo, there is another way, which is thus; take a ſmall Rowler, about the bigneſſe of an Arrow, and roule a length of paper about it, and paſt it round, letting it dry, and then you have a hollow trunke of this paper; fill this with your ingredients, thruſting it hard till it be at the top, and then cut it into

anto ſhort pieces, about halfe an inch long, nd then in warme glew dip one of the ends therein, and let them dry, to the end that both ends of your Star fire not, and then put the other end into powder-duſt; you may put them on your Rocket, in one or two tire, putting in Powder-duſt between every tire, that they may all take fire.

The priming is thus made; Take Oyle of Camphire, ſoaking cotten wick therein, and being moyſt, roule it in fine Powder-duſt, and then hang it up till it be thorow dry, and then keep it cloſe from ayre till you uſe it, or the ſpirit of the Camphire wil decay.

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12. *The order and making of other ſeverall Fire-workes for the Rocket, as Serpents, or Fiſgigs, Reports, golden and ſilver raine, &c.*

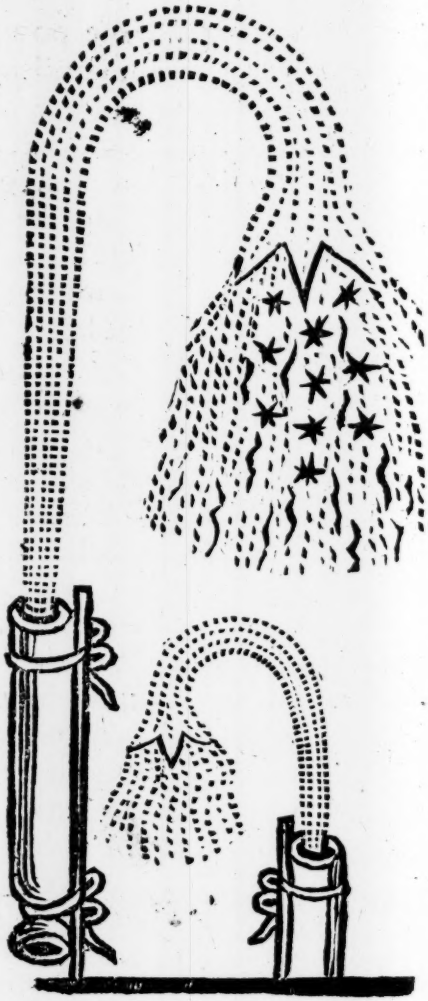
THe Serpents, or Fiſgigs are made about the bigneſſe of ones little finger, by rowling a paper upon a ſmall Rowler, (as it was for your ſtars) and choking the paper Coffin an inch from the end, then fill it three inches with Powder-duſt, and then choke it,

and

and then put in a little corne powder, that when your ſerpent have played a while to and fro it may break and give a report: you may fill it with the Starre mixture, and putting divers of them on the head of a large Rocket, they will firſt appeare like Stars, and when the Stars are ſpent, taking hold of the powder duſt, and they will run wrigling too and fro like Serpents, and at laſt will give ſo many reports, very delightfull to behold.

The Reports are made in their proper caſes as the Serpents are, but the paper muſt be ſomewhat thicker, which will cauſe it to give the greater report: Theſe are to be filled with graine powder, or halfe powder and Star mixture.

To make the golden Raine, you muſt get ſtore of Gooſe-quils and cut them off next the feathers, and fill theſe quils hard with the ſame compoſition that is in your Rocket, and muſt be put on the head of the Rocket with the open end downwards: If it were poſſible to put a thouſand of theſe quils upon the head of a Rocket, it were a dainty ſight to ſee how pleaſantly they ſpread themſelves in the ayre, and come downe like ſtreams of gold, much like the falling down of Snow, eſpecially if the wind be any thing high.



If you will make ſilver Raine it is per-
formed

formed as the other, only you muſt fill your quils with the ſame ingredients that you did your white ſtars.

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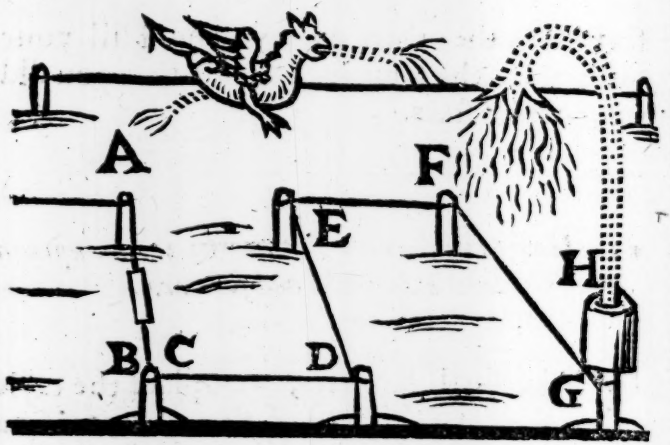
13. *How to make your fire-works to run upon a line backward and forward.*

TAke ſmall Rockets, and place the tayle of one to the head of the other, tying a cane to them to run on a line ſoped; the line may be a hundred yards long, or longer if you pleaſe, being well ſtretched and ſet on ſtakes, as you may ſee in the Figure following; As admit the Line to be ABCDEFG. and if you give fire to the Rocket at A, it will fly to B, and then come back againe to A, Then fire another at C, and that will fly to D, and back againe to C, and ſo of the reſt And at the laſt (if you pleaſe) may be placed a pot of Fire-w orks, which being fired will make good ſport, having Serpents and other things in it, which will variouſly intermix themſelves in the ayre, and upon the ground and every one will extinguiſh it ſelfe with a report,

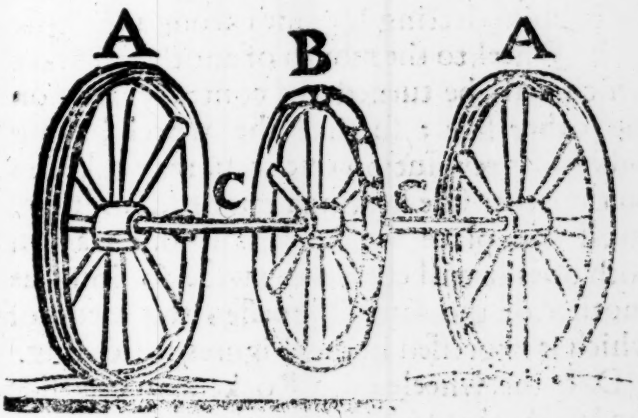


14. *How to make a Wheele of* Fire-work *to run forword and backward upon the ground.*

YOu muſt get a paire of light Wheels like ſpinning Wheeles, both of a bigneſſe, which muſt be faſtned to a ſmall light axell tree, in ſuch manner, that they may not move about the ſame; and on the middle of the axell tree faſten alſo a Fire-wheele (as you may ſee in the Figure following) which muſt not be ſo big in compaſſe as the two other wheels, becauſe it muſt not touch the ground, ſo that being faſt in the middle upon the ſame axell tree, it cannot run, unleſſe it carry the other wheels

wheels with it; theſe being ſet on an even ground wil run a great way without ceaſing: Now that you may make it return back again when it hath run its courſe forward you may make your middle wheel in ſuch manner, that it may have rockets on both ſides, ſo that when one ſide is ſpent, it may give fire to the other ſide, the mouths of the Rockets being faſtned the contrary way, will make a returne with a ſwift motion.

A A. Are the two outward wheels faſtned to the axell tree.



CC. Is the Axel-tree, on the which the three wheels are all faſtned.

B Is the Fire wheel in the middle, & carrieth

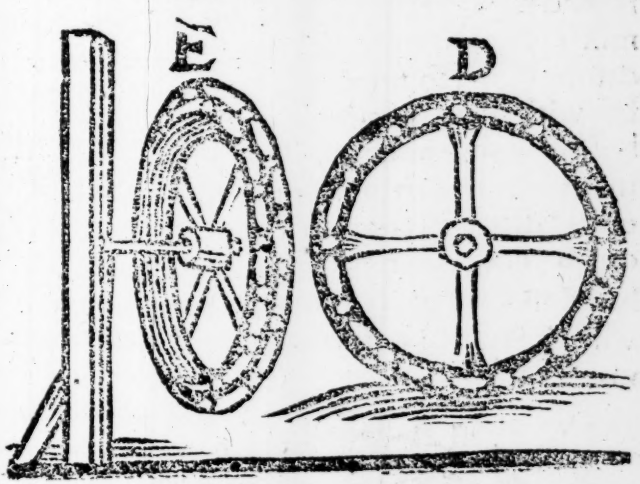
it not ſo great a compaſſe as the other two wheels.

15. *An other way for a ſingle Wheele to be placed on a poſt, to turne both waye s.*

THis may be performed with a ſingle wheel ſo that the Rockets may be placed on each ſide (as in the other middle wheel) with a hole from the one ſide to the other for a vent; then place your Rockets firſt upon one ſide (but ſo, that the laſt Rocket be placed over the ſaid hole) and boring a ſmall hole in one ſide of the laſt Rocket, put in a cotten wick for priming, letting it come through the hole in the Wheel, to the mouth of another Rocket which ſhall be turned the contrary way on the other-ſide; ſo that the wheel having finiſhed its revolution one way, may take fire on the other ſide making a retrogade motion: but if you place the Rockets all one way on both ſides it will continue twice ſo long as another of the ſame bigneſſe, the form of which is expreſſed in the Figures following.

D. Is the wheele with Rockets on one ſide the laſt Rocket to have a vent to paſſe thorow to the other ſide.

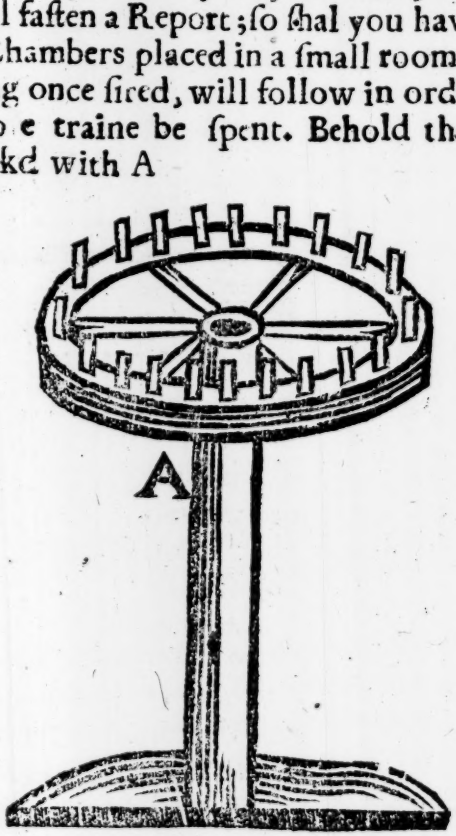
E, Repreſents the ſaid wheele finiſhed, with Rockets on both ſides.



16. *The order to make a fixed wheele, ſtanding upon a* Poaſt, *giving divers reports.*

THere muſt be a wheele turned two foote wide, & out of the upper ſide muſt be a groof turned half an inch wide & halfe an inch deepe, to which grooſe you muſt have a piece of wood ſo fitted, that it may juſt ſlide in, which peece of wood muſt have ſo many ſmall holes bored in it as you will have reports about it, and be ſure you ſet them not too neere together, leſt the fire of one beat the other downe; having thus provided your wheele, you muſt make a conveyance, or hollow Trunk of paper, which will juſt fill

it, and fill the ſame with ſome of your ſlow mixtures of Starres, and then putting on the cap of wood ſo fitted with holes, being made faſt with glew, pierce every hole into your hollow conveyance, ſo that putting a quill into every one they may take fire, and to the quill faſten a Report; ſo ſhal you have a peale of Chambers placed in a ſmall roome, which being once fired, will follow in order, til the whole traine be ſpent. Behold the Figure marked with A



17 *Anſwee*

17 *Another fixed Wheele upon a poaſt which will caſt forth many Rockets into the Ayre*

THis Wheele is not much unlike the former, which will give fire to divers Rockets ſtanding circular, differing little from the former, only you muſt make a hole for every ſtick to paſſe throw, (as it is in the *Figure* B.) and therefore it muſt be made ſomewhat broader, which wil work the like effect that the other doth, by conveying fire from one Rocket to another, till they be all ſpent.

The mixture for this conveyance muſt be very ſlow therefore uſe theſe Ingredients: Take eight ounces of Roch peter, foure ounces of Sulphur vive, halfe an ounce of Camphire, two ounces of fine Powder-duſt, and meale theſe very fine, and mingle them together, adding halfe a quarter of an ounce of Linſeed Oyle and as much of the Oyle of Peter, theſe Oyles muſt be dropped in by degrees, and ſo wrought up, till you find your mixture bound like Dough, and this is both ſlow and ſure.

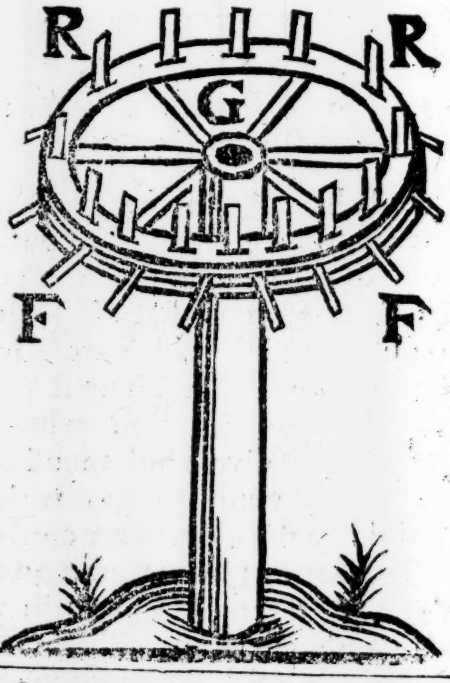
18 *Another*

18. *Another*

18, *Another dainty fixed Wheel, which will caſt forth divers Fiſgigs, or Serpents, and as many Reports.*

YOu muſt have a wheel turned with a groofe on the top thereof to put in the conveyance of paper, then fit one a peece of wood (as it was before ſhewed) with ſmal holes to put in quils, which are for firing your Reports. and muſt be placed round about the upper part of your wheel ; and on the ſide thereof divers holes muſt be made of the bigneſſe of your Fiſgigs, which muſt be pierced through to the paper conveyance, thoſe fiſgigs that are placed round on the ſide, & the Reports on the top, one train wil fire them all ; and in firing you ſhall ſee all the Fiſgigs flying roundabout, one after another as the fire paſſeth to them; & for every Fiſgig which paſſeth out, ſhall be fired a Report; ſo that there ſhall be a continual motion, untill the whole traine be conſumed.

G. Is the Wheel with Reports and Fiſgigs,
R R. Is the Reports on the upper part.
F F. Is the Fiſgigs on the ſide of the wheel,



19 *Of night Combatants with Faulchions and Targets, Clubs, Maſes, &c.*

THis is performed by two men ſeeming to fight, or to make way in a throngof people; the Clubs at the great ends are made like a round basket (or other forme) with wicker, or ſmall ſticks on a ſtuffe which muſt be filled with Rockets in a ſpiral forme glued, and ſo placed that they fire but one after

after another: The Faulchions are made of wood in a bowing manner having large backs to receive many Rockets, the head of one neer the neck of another, glued and faſtned well together, ſo that one being ſpent. the other may take fire; the Targets are made of thin boards, which are challenned in ſpiral Lines, to containe Primers to fire the Rockets one after another, which is all covered over with a thin covering of wood or paſt board, bored with holes ſpiral alſo. which Rockets muſt be glued and made faſt to the place of the channels: Now if two men having in each hand a Target and a Faulchion, or a Maſe of fire, and ſeeme to fight, it will appear very pleaſant to the Srectators; for by the motion of fighting, the place will ſeem to be full of ſtreams of fire: And there may be adjoyned to each Target a Sun or burning Commet, with Lances of fire, which wil make them more beautiful & reſplendant in that action.

20 *Another dainty one with Fiſgigs, called Iack in a Box.*

THe manner of making the ſame is in this order; cauſe a box of Plate to be made about ſix inches deep & of what compaſſe you pleaſe (with a ſocket at the bottom to put in a ſtaffe) then putting in a qnantity of corne powder, or powder duſt in the bottome of the box, yo u may fill it with Fiſgigs or Ser-

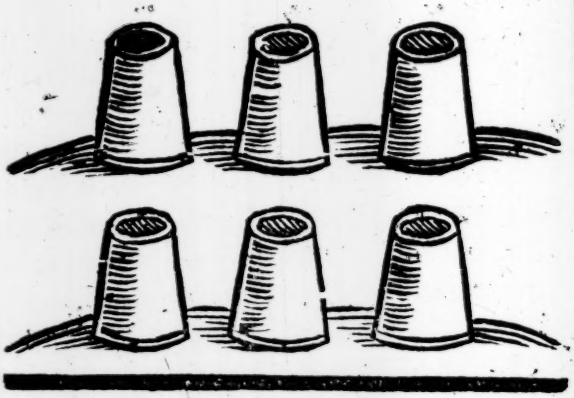
pents

pents leaving a place in the middle for a Cane to goe through to the bottom, which Cane muſt be filled with a ſlow receit in which you muſt put a quantity of Camphir, but no oyles, in regard of the narrow paſſage it hath to burne, without any other vent; then put your Cane down, leaving it an inch above the box, aud take a thick piece of paſt board, cutting a hole for the Cane to paſſe through and glew it cloſe to the Cane, that the fire paſſe not through before its time; this paſt board muſt be of ſufficient breadth to covet the box quite over, then put it on a ſtaffe & light your cane, which wil appear only like a candle, & after a little ſpace of time you ſhall hear a ſuden noyſe, & ſee all thoſe Fiſgigs flying ſome one way, ſome another: This hath given good content to the beholders? youmay if you pleaſe make Clubs or Maſes of the ſame

21 Of *Pots of fire for the ground, which wil make the aire rebound with their Reports.*

MAny Pots being fired together, do give a fine repreſentation and recreation to the Spectators; for thoſe Pots being filled with bals of fire, or flying Serpents for the ayre, will ſo intermix one within another, in flying

flying here and there alittle above the ground and giving ſuch a valley of Reports, that the ayre will rebound with the noyſe, and the whole place be filled with ſundry ſtreams of pleaſant fire; which Serpents wil much trouble thoſe neer the place to defend themſelves in their upper parts;& they wil be no leſſe buſied by the balls of fire which will ſeem to annoy their feet.



22. *The making of a fire-ball for the ground, which will be in continuall motion.*

YOu muſt get a ball turned of ſome light wood, & then let it be ſawed through the midſt with a thin bow-ſaw; then make on each ſide a hollow groofe to lay in two Rockets

(joyned

joyned together after the manner of the Runners) and then cloſe up your ball with glew; onely in the place where the two Rockets joyn ſhall be a groof, which muſt be paſted over with paper, that the ſecond Rocket taking fire may have a vent, otherwiſe the ball will ſerve but once, then fire it, and you ſhall ſee the operation with pleaſure.

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13. *The making of a Ball for water, which ſhall burne with great violence.*

SOw a round caſe of ſtrong Canvas, in ſhape of the caſe for a Foot-ball, but ſomewhat leſſer, and very round; having thus made your caſe, then proceed to the filling of it, which muſt be done in this manner: you muſt firſt put in three or foure good ſpoonfuls of your mixture following, and with a ſtick made round at one end, force it cloſe together, and ſo continue filling it, and between every filling put in your ſtick, and force it together, round it continually in your hand, till you have finiſhed it; which having done, ſow it up cloſe, and then arme it with ſmal cord, which is called marling; after you have thus done, you muſt coat it with a

quantity of Roſin, Pitch, and Tallow diſſolved, and dip your bal all over in the ſame, provided that you leave two vents to fire it, which muſt be pierced a third part into your ball, which muſt be ſtopped with two ſmall ſticks, till ſuch time that you come to uſe them; the forme thereof you ſhall ſee in the next Figure by the Letter D. then pulling forth the ſticks, fill the two vents with fine powder duſt, and firing it, caſt it into the water, and you ſhall have your deſire; but you muſt always be ſure that your bal be throughly fired before you caſt it from you: The receipt for this bal followeth.

Take one pound of Powder, eight ounces of Roch-water, foure ounces of Sulphur, two ounces of Camphir, one ounce of oyle of Peter, one ounce of Linſeed Oyle, halfe an ounce of oyle of Spike, and two ounces of Colophonia.

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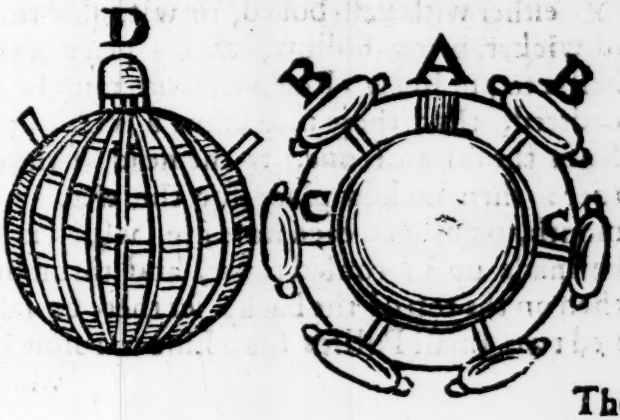
24. *Another dainty Water-ball, which will ſhoot forth many Reports.*

THis Ball muſt be made of wood (as was ſhewed before) in two peeces, becauſe you may joyne it cloſe together at pleaſure, having

having ſmall holes bored round about it, to put in your quils which juſtifie the Reports, which reports or breakers muſt be made of paper, choaked at both ends, and primed through the midſt; they muſt bee faſtned round with pitch, and ſo covered round about, that no water may paſſe in: you muſt fill this ball in two halfes, that you may force it very cloſe together, and when its filled, glew it faſt, and arme it well with ſealed wyer, then put in your breakers, with a quill which muſt enter into the ball, and likewiſe into the breaker; the forme whereof you may ſee in the Figure following: for A. is the mouth of the ball where it is to bee fired, B.B. are the reports or breakers, being made of paper, and filled with Corn Powder: C.C. are the Quils, which muſt be filled with powder duſt, and ſerveth for firing the Reports.



The

The Receipt for this ball are theſe; Take one pound of Roch-peter, foure ounces of Powder-duſt, three ounces of Sulphur-vive, two ounces of Camphir, one ounce of Linſeed-oyle, two ounces of Roſen, and one ounce of Oyle Benedict: you muſt powder thoſe things which are to be powdred, and mingle them altogether, and by little and little ſprinkle your Oyles, till you have wrought it like Paſt, and then uſe it; the quils muſt be filled onely with powder duſt, becauſe it muſt fire ſuddenly.

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25. *How to make a Dragon, or the like, to run on the Line, ſpitting of fire.*

THe bodie of the Dragon muſt bee made either with Paſt-board, or with fine rods of wicker, being hollow, with a place in the bellie to put in two Rockets, and muſt be ſo ordered, that there may come a ſmall Pipe from the taile of one, to the head of the other: then make a place for the eies, and mouth, to put into each hole fire, which muſt be made up in rouled paper, and thruſt in, then on the top of the back, let there be faſtned two ſmall Pullies for a Line to runne in, which

which being done, your Dragon is finiſhed for firing, which muſt be thus; firſt fire it at the eyes and mouth; (alwaies obſerving that this receipt muſt bee ſome ſlow mixture, ſuch as your ſtars) then fire that Rocket, which is placed with his mouth toward the taile of the Dragon, which will make it ſeem to caſt fire from thence, till he come to the end of his motion; and then on a ſudden (as a creature wounded with ſome accident) ſhall returne with fire coming forth of his belly: This being well ordered, will give good content to the beholders of the ſame: behold the Figure.

26. *The manner and forme to repreſent Saint George fighting with a Dragon in Fire, on the Line.*

WHen you have formed your Figures of Paſt-board, or Wicker (as aforeſaid), you muſt make a hollow trunke through the body of each Figure, for a great Line to paſſe through, and likewiſe for a ſmaller Line to draw them to and fro from each other, which muſt be faſtned in this manner (as you may ſee in the Figure following:) At the breaſt of the Dragon let one end of one cord be tied, which muſt paſſe through the body of the George, and turning it about a Pulley at the other end, faſten it to the backe of the George, and at the breaſt of the George let another cord be tied, which muſt paſſe through the body of the Dragon (or a trunk on the back) and ſo returning about a Pulley at that end, muſt be pulled ſtreight and faſtned to the tayle of the Dragon, ſo that as you turne that Wheele, the George and Dragon will run furiouſly at each other; and when you pleaſe, you may cauſe them to make

make a retreat, and come on againe: but by all means forget not to ſope you line extraordinary well; and likewiſe have a care that your worke be not too heavy above line line, but that they may hang in an equall ballance, otherwiſe they will turn their heeles upward, which would be a great diſgrace to the work and Work-man: And thus much to the ingenious I ſuppoſe will ſuffice; behold the Figure.

27. *How to make a Whale, a Mermaid, or other to play and ſwim upon the water.*

YOu may make Figures of what ſhape your fancie beſt pleaſeth: the body muſt

be made of light wicker rods, and in the middle of the bodie let there be placed an axel-tree, having two Wheels coming into the water, yet ſo as they may not bee ſeen; theſe Wheeles muſt be made hollow, to containe a quantity of ſand or water; the uſe of it is to keep the body of your Figure upright, and able to ſink it ſo far into the water as is needfull, and likewiſe to make it to ſwim more ſteadie: note that theſe wheels muſt be looſe, and the axel-tree faſt; in the midſt of this axel-tree place three or foure great Rockets one by another, with their mouths all one way; yet ſo provided, that there may be ſuch a diſtance between each Rocket, that there may come a vent from the taile of the firſt to the mouth of the ſecond, and from the ſecond to the third. And to the end that it may continue the longer in motion, you may place divers lights about the body, to make it the more beautiful; every of which lights extinguiſhing ſhall give a report, and ſo conclude. There are divers other fine Workes to be performed on the waters, which a judicious Artiſt may invent.

The Letter B. repreſents the Mermaid.
C. is the Wheels on the axel-tree.
D. Are the Rockets on the axel-tree.

28. *Of divers other rare workes, which are to be performed on the water.*

THoſe places which are ſituated upon Rivers or great Ponds, are proper to make theſe recreative Fires on; therefore if you deſire

deſire to make ſome of conſequence, they ought to be built upon Boats, or light Timber, which may be framed like Beaſts, or Fiſhes ſpitting fire; upon which may be built Caſtles, Pageants, Turrets, or other conceits as you pleaſe. As if you would preſent a Caſtle, out of which ſhall iſſue a Dragon, which ſhal ſwim through the water, and that Dragon be encountered by a horſeman, which is thus performed. Cauſe a Caſtle to be framed (as is ſhewed) on light Timber, and let the bottome of the door of the caſtle, with a ground plat be two foot under the brim of the water, (the reaſons follow) and at a foot high within the Caſtle let there be a certaine Line tyed, which may paſſe through the body of the Dragon, and may be faſtened neer the ſhoare, where muſt be a float ſunk ſo farre under water, that the Line may not be perceived; then faſten on your Dragon, (as was ſhewed before for the Line) but ſo, that the head of this may alwayes be above the Line, whereas the other was under: then at the appointed time, there muſt be one ready within the Caſtle, to fire thoſe parts of the Dragon which is requiſite; which being done (by the helpe of the Pulleys) ſhal paſſe it through the water, which ſo ſoone as it preſents it

ſelfe

ſelfe, *Neptune* on a Sea-horſe ſhall come, and encounter the ſaid Dragon, and at the laſt ſhall overcome it: Or you may order the work ſo, that which you pleaſe ſhal have the victory; for that which keepeth fire longeſt, is ſuppoſed to have the beſt, and that which is ſooneſt ſpent, to have the worſt.

G. Repreſenteth the Caſtle floating on the water, from whence iſſueth the Dragon.

E. Is the Dragon coming forth of the caſtle.

D. Is *Neptune* riding on the Sea-horſe, comming to encounter the Dragon.

F. Is the Pully that cauſeth theſe motions by the Line, to be pulled to and fro.

You

You may if you pleaſe, build upon Boats, or Timber, Turrets, Pagents, or Caſtles, as is ſaid, to receive or hold diverſity of Fire-works that may be made within them, which may play out, and play divers fires, as Reports, Starres, Golden Raine, Fiſgigs, Granado's, and balls of Fire to burne in the water, which will give great content to the eyes of the beholders; and in the concluſion, it may be ſo ordered, they may fire one another, for which end they were made.

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29. *The manner to compoſe a Ship of Fire-workes, which being once fired, divers motions will preſent themſelves.*

YOu muſt cauſe a Mould, or body of a Ship to bee made, that you may take off the upper decke, to place ſome workes underneath, where you muſt have a fire-wheele placed with a Screw on the Axeltree; this wheele muſt be placed in the Sterne, and muſt turne a Rouler, on which muſt be two girts placed, that muſt paſſe on each ſide of the main Maſt, and run on to the Fore-ſhip; in this Wheele there muſt be a hollow Spoke and Axeltree, as I have ſhewed, which muſt be ſo ordered, that the

the wheele being ſpent, it may convey fire to a tire of Guns, lying round about, which muſt be fired with a cloſe conveyance; and having paſſed that, it muſt take hold of another conveyance, which ſhal give fire to certaine Rockets, which muſt be placed in the bodies of ſome Figures repreſenting Marriners, and muſt be ſo fitted, that they may have a Cane joyned to their body to guide them, that they may run on the ropes from the Deck to the top of the *Maſts*. This and other the like may be performed with great facility; the forme of which followeth.

B. The Fire-wheele which moveth the Rouler, and carrieth the Girt whereon the Figures are placed.

C. The Figures placed on the Girt being in motion.

E. E. The Figures which ſtand ready to run up the cords, ſome halfe way, ſome at top.

30. *Of Launces of Fire, for pleaſure and for ſervice.*

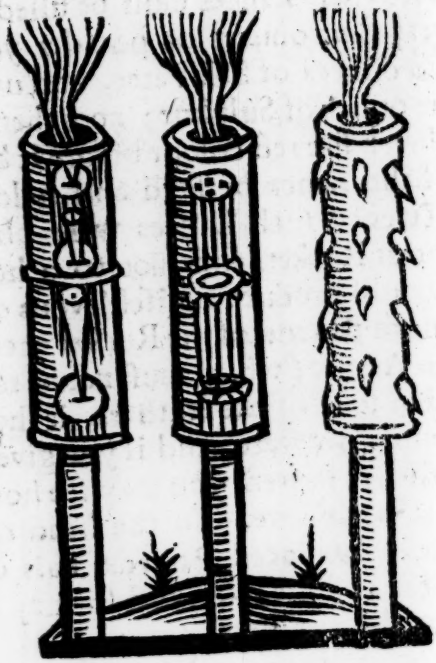
STanding Launces are commonly made with hollow wood, to containe ſundry Petards or Rockets; theſe Launces may bee faſtened to poſts, ſo that they may not be overthrown in the flying out of the Rockets

or

or Petards: but there are a leſſer ſort of Lances, whoſe caſes are of three or foure foulds-ings of paper, of a foot long, and about the bigneſſe of ones finger: the compoſition wherewith theſe Lances muſt be filled is this; unto every four ounces of powder you muſt adde two ounces of Salt Peter, and unto that adde one ounce of Sulphur; and then it will make a brick fire red colour before it be halfe ſpent, if the Lance be fired and held to it: Now if twenty ſuch Lances were placed about a hreat Rocket, and ſhot to a houſe or ſhip, it would produce a miſchievous effect.

Or, if unto the end of the Rocket there were faſtned an Arrow (which muſt not be too heavie) and in ſtead of the feathers, it ſhould be of thin white tin plate, and if you give fire to it being thus prepared, you may ſee how ſerviceable it will prove. To the head of ſuch Rockets may be placed Petards, bals of fire, Granadoes, and the like, and ſo may be applied to warlike affaires.

HERE



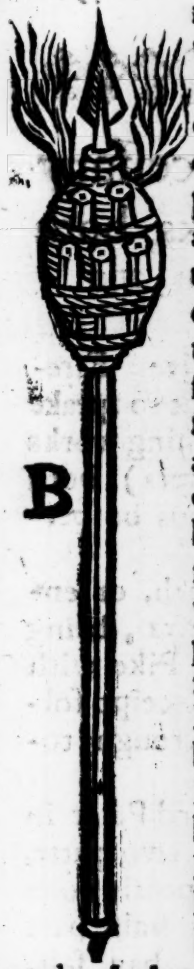
Here

Here followeth neceſſary and ſerviceable Fire-works, both for Land and Sea Execution; and firſt for the Pike.

HAving treated of Recreative Fire-workes, I hold it convenient to ſpeake ſomething in briefe concerning works for ſervice (neceſſary for theſe times) both for Land and Sea; which may thus be performed.

If you would make good a Breach, or enter a Ship, then take ſtrong Canvas, being cut, ſowed, and tyed hard on a Pike with Marlin-cord, then with this Receipt following, being compounded and wrought together doe thus.

Take Roch-water one part, and Peter in meale as much. Sulphur mealed two parts, three parts of Roſin in roch, Turpentine one part, as much of Linſeed-oyl, one halfe part of Verdegreaſe, Bole-armoniack, bay ſalt, Colophonia, of theſe three one third part, and if you think fitting, halfe a part of Arſ-



B

nick : Then coat the ſame over with this liquid mixture melted in a pan or pot : take foure parts of Pitch, one part of Linſeed oyl, one third part of turpentine, ſulphur one part, tar one third part, and one part of Tallow : After that theſe are melted, and being cold, bore two holes in each of the ſame an inch deep with a ſharp bodkin or iron, filling the ſame with fine bruiſed powder, and put in each hole a little ſtick of two or three inches long, to be taken out when you would fire the ſame: (This compoſition will burne furiouſly.) If you pleaſe you may faſten to the ſame receit on your Pike, divers light pipes or canes of iron, or braſſe of ſixe or ſeven inches long, being piſtoll or Caliver bore, (as the Figure marked with B. ſheweth) placing the touch-hole thereof cloſe to the canvas, boring the ſaid canvas through, and priming the ſame with fine powder, paſting a paper thereon, & then coat the ſame over

as

as before ſaid; This being charged with powder and bullet, will doe great execution in a throng, either defenſive or offenſive:

How to arme a Dart or Javelin with Wild-fire, for the Sayles or ſides of Ships.

YOu may arme a Dart, Javelin, Partizan, or ſuch like weapon, to doe excellent ſervice, being in the hand of a valiant Souldier, as you may ſee by the Letter C. in the ſame: The ſame ſhould be filled with the ſelfe like Receit, as before is ſhewed for the Pikes with Wilde-fire, which will be a very good weapon for to go into the ſides or ſailes of ſhips.

Or you may place upon the ſtaffe of your Javelin certaine Piſtoll barrels of one length, about ten or twelve inches, letting the ſame into the wood round about the ſtaffe a little, as a Piſtoll barrell is into the ſtocke (as the Figure marked with the Letter D. ſheweth) which ſtaffe ſhould have ſo much ſubſtance at the one end, whereto you may naile the ſame barrels faſt at the breech; and about the midſt of the ſame put over a hoop of

iron as cloſe as ever you can, the which is to be charged in this manner following: viz. Firſt charge every barrell with two inches of powder, after put in a bullet a little lower then the bore of the ſame peece; then take of this ſlow Receit following.

Of bruiſed powder foure parts, ſalt Peter in meale, Linſeed oyle, brimſtone, finely beaten, varniſh, and of willow or hazell cole moyſtned with a little vinegar: (of all theſe five laſt Ingredients one Part;) which muſt bee well wrought together with the hand in ſome woodden veſſell, till you feele that it will cling together, of which you muſt put in after the bullet two inches, and thruſt the ſame together with a Rammer ſticke; and then again put in two inches of powder, and after that a bullet, and laſtly

laſtly two inches of this ſlow Receit, until you have filled every one of the ſaid barrels within halfe an inch of the mouth, the which is to be filled up with the ſaid ſlow Receit, and powder bruiſed and mixed together, that it may the ſooner fire: This being done, bind a paper over the mouths of the ſame, until you wil uſe them; and giving fire to any one of the ſame, it wil fire all the other, and every one wil diſcharge three or four ſhots a peece one after another, to the hurt of the enemy, being uſed in ſervice either to offend or defend; to the pleaſure of the beholders, being uſed in triumph with bullets of Receit rolled in tow, and coated with brimſtone.

How to enter up a paire of ſtaires, or to defend oner ſelfe, being in a narrow Room.

IF you are ſtreightned up in a narrow Room, to defend your ſelfe, or would enter up a paire of ſtaires, where you cannot uſe a long weapon, you may make a Logget, whoſe ſtaffe ſhall be but three or foure foot long, arming the ſame with the ſame Receit as was ſhewed to arme the Pikes, whereon

you may place certaine pipes of braſſe, or iron, charged as before is taught: And if you pleaſe, you may put into the end of the ſtaffe a Rapier blade with a skrew, to take off and on at your pleaſure, as the Figure marked with the Letter E. ſheweth.

How

How to defend a Breach, a Ship, or other place of defence.

TO performe this, you may arme a Partezan, Javelin, or Fork with Fire-work, and to ſhoot every one of them with ſeven or eight piſtoll or muſket bullets, in nayling a plate of Iron croſſe the pike or point of the ſaid Javelin, or between the graines of the forke, piercing certain holes through the ſame, unto which with a ſtrong wyer you may make faſt on either ſide ſo many pipes of Iron, of ſeven or eight inches long, as you think convenient to fix upon either, or any of the ſaid weapons, and charging the ſame with powder, bullet, and wad, you may cauſe the ſame to fire one after another, in filling a role of canvas ſewed together, (as the figure F. ſheweth) with ſlow Receit, and coated, as before is ſhewed: And this being placed artificially upon the ſhort barrels or pipes (as the Figure G. H. ſheweth) and primed with fine powder directly againſt the Touch-holes of the barrels, paſting a little paper over the ſame, firing the ſaid trains at both the ends,

which as they burne, ſhall ſtill diſcharge the ſhort Peeces one after another, to the great hurt of the Adverſary.

How

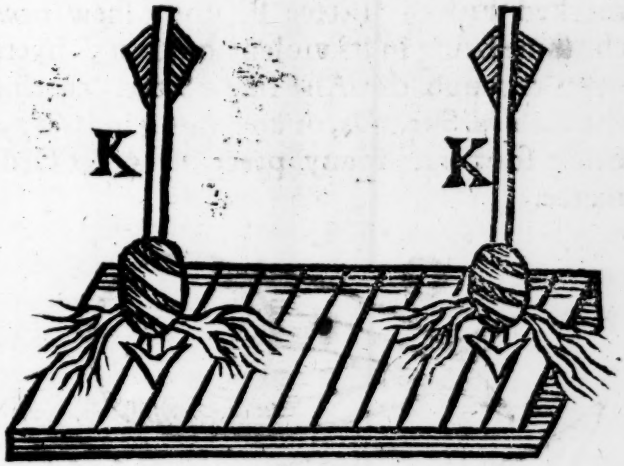
How to ſhoot Arrowes of Wild-fire out of a Croſſe-bow.

THis is an excellent way to fire the Sailes of Ships, thatched Houſes, Stacks of corn, or Hay, or any ſuch combuſtible matter apt to burne, which may be done at a pretty diſtance off, when you cannot conveniently come near the ſame: Therefore it is good to have certaine ſtrong Croſſe-bowes, to bend either with a Rack, or Geſſell, and to ſhoot out of the ſame ſtrong Arrowes armed with Wild-fire, and headed as the Figure I. ſheweth: or you may ſhoot theſe Arrows out of a Muſket if you pleaſe: The compoſition is to bee made as is taught in the arming of pikes with Fire-worke: which Arrowes may doe great good for divers other ſervices.

How to burne woodden Bridges, Gates, Houſes, &c.

TO performe this and the like militarie Services, if you can come to annoint the ſame with ſome ſuch liquid compoſition as is before ſhewed for the coating of Fire-works, melting in the ſame a good quantity of bruiſed brimſtone, and ſticking in the ſame Arrowes of Wild-fire, made in proportion as the

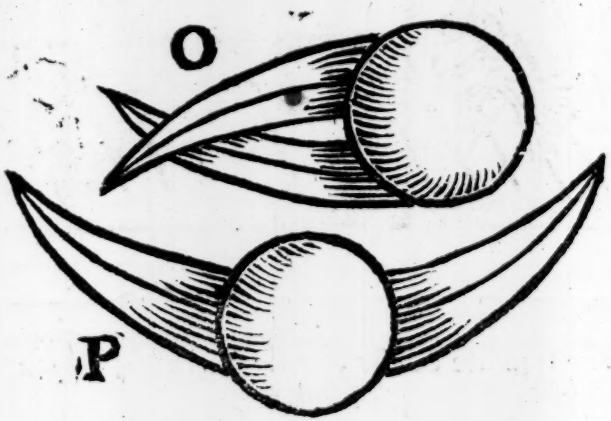
the Figure K. doth ſhew. The Receipts may be made as the former for Pikes with Wild-fire, which will certainly ſet the ſame on fire, for the Receipt is ſo forcible that it wil burn in the water.



How to cut the Cables, or the Shrouds of ſhips at a good diſtance.

FOr Sea-Service there is deviſed out of great Ordnance to ſhoot certaine Bullets that ſhall open and ſhut with a joynt in the head like a paire of Compaſſes, the arms or legs

legs whereof are made in proportion like to the blade of a knife taper-wiſe, and bowing ſharpe towards the point, as the Figure ſheweth marked with the Letter O. and how the ſame is to bee put into the Peece after the Powder and Wad; and the other Figure marked with the Letter P. doth ſhew how the ſame being in its violent motion, flyeth open through the Aire like a Sithe, cutting the Cables, Shrouds, or any thing in its way, being ſhot out of any peece of great Ordnance.



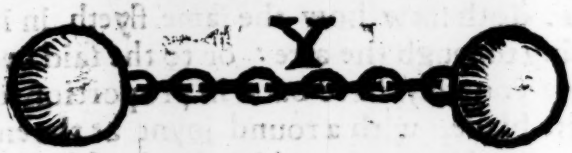
Others

Other Devices for the cutting of Shrouds, or the like.

FOr to cut the Tackle or Shrouds of ſhips, it is good to caſt halfe bullets of Iron, or Lead, unto every of which make faſt a bar of iron, wrought either three or four ſquare, about the bigneſſe of a mans finger, and cut ſome fourteen or ſixteen inches long, with a loop at the end; unto which a Ring of Iron is to be put, that the ſame may cloſe and ſhut, as the Figure with the Letter S. ſheweth; which ſheweth alſo how you muſt put the ſame into the Peece; and the other Figure with the Letter T. doth ſhew how the ſame flyeth in its moving through the aire: or to the ſaid half bullets you may have bars in proportion of a knife blade, with a round joynt at the end to open and ſhut, the which kind of bullets may as well be made to ſhoot out of Muskets, as out of great Ordnance, to the great annoyance of the Enemy, eſpecially in Sea Service.

Another for the ſame.

ALſo to cut the Tackle of ſhips, or to doe many other good ſervices, either with Musket or great Ordnance, it is good to chain two bullets together, as the Figure Y. ſheweth.



Another.

ALſo, for the like purpoſe aforeſaid, if you take a ſmall Iron Chaine with good Linkes, rolling the ſame together round

round, that it may go eaſily into the Peece, cloſe downe to the wad; the ſame being again diſcharged, will ſpread it ſelfe at length and doe good execution.

How to doe excellent Service againſt an Enemy who would enter a Breach, a Gate, a Bridge, a Ship, &c.

IF that the Enemy will enter (and that you intend not to yeeld) it is neceſſary to have in readineſſe divers hollow bullets made of two plates of Iron, or other mettal, ſo as the one may cloſe about the other round like a box, which being filled with pebble ſtones, ſquare peeces of Iron, called Dice-ſhot, Musket-bullets, or the like, which being diſcharged out of a Murdering Peece, it will doe great execution: if you will fill caſes of wood, made like unto a Lanthorne with the ſame ſtuffe, it will performe the like ſervice being ſhot out of a Murdering peece: Behold both the Figures marked with the Letter A.

How

How to prevent a traine of Powder laid to blow you up, before you enter a Ship, or other place.

IF you imagine that there is ſome traine laid to blow you up (as it often happeneth) you may prevent the ſame, by making certaine Purſes of Canvas, filled halfe full of good corne-Powder, and with eight or ten fiery bullets of an inch, or an inch and halfe in height; and filling the other part of the Purſe with ſlow Receit, you may when you thinke good (the Receit being well fired) throw the ſame from you, which will burſt in peeces after the lighting on the ground, and

and diſperſe the ſaid incloſed bullets here and there; which bullets will burn furiouſly, and if there be any traine of Powder laid near, it will preſently fire the ſame. The ſaid purſes are very good to throw out of hand, or may be ſhot out of a Morter-peece amongſt men in Battle array, to diſorder them, or into a Town; the Figure B. ſheweth how to fill the purſes, and the Letter C. ſheweth the proportion of it, being made up, filled and coated over.

The Receit for making theſe bullets of Wild-fire following: Take of Sulphur in meal ſix parts, of Rozin in meale three parts, melting the ſame in ſome pot or pan over a ſlow fire; then take of Stone pitch one part, of hard wax one pound, of Tar one fourth part, of Aqua vitæ one halfe part, of Linſeed oyle as much, of Verdegreaſe one fourth part, and of Camphire one eighth part, melting al theſe together likewiſe, and ſtir into the ſame two parts of Peter in meale; and taking the ſame from the fire, put therein foure parts of bruiſed Powder, working the ſame well together in your hands, and roule the ſame round of the bigneſs that you would have your bals of, boring two holes thorough the ſame acroſſe, which when you would uſe, muſt be primed full of bruiſed Powder; theſe bals

will be as hard as ſtone, and needeth no coating, and being fired will burn furiouſly, and cleave to any thing, not diminiſhing in quantity being burned to aſhes, which aſhes will kindle an oaken board: If you pleaſe, you may ſhoot theſe bullets out of a Peece of great Ordnance. The Figures for the Purſes here followeth.

B

C

Short

Short, but Certaine Rules for the making all ſorts of Fire-Works for recreation, as Rockets, Fiſgigs, Runners on the Line, Serpents, Stars, Fire-wheels, Clubs, Jack in a Box, *&c.* Together with the quantity of all the Ingredients thereunto belonging: and the manner of compounding them.

How to compoſe a Caſtle of Fire-workes with ſmall charge, that in the firing will yield as much variety, and give as much content as any: Now publiſhed for the benefit of young Practicioners. By W. R.

IN all things actuall a certaine method is requiſite to be obſerved. Therefore, ſuch as intend to put in Practiſe theſe inſuing Inſtructions, are firſt to provide themſelves of ſuch Rocket Moulds as are ſuitable to the Worke they undertake. The diſcription and proportion of them, I conceive ſomewhat needleſſe, in regard any one may in Crooked Lane, *London*, be furniſhed with what ſizes they pleaſe. This being premiſed, I ſhall begin with

Fiſgigs, by many called Serpents.

THe beſt way of making them is thus: having provided a ſmall Mould without a Needle,

make a Coffin of paper fit for it, which choak halfe an inch from the end; then put it in your Mould, and fill up three inches with Powder duſt onely, finely beaten and ſifted, then choak it again, and afterwards fill it about an inch with corne Powder, then choak it cloſe, and your Fiſgig is prepared. To uſe theſe on the tops of great Rockets, put into the mouths of them ſome of the Compoſition for Stars, which will ſhew very delectable to the ſpectators; for after they have continued a good ſpace in the forme and manner of Stars, they will then riggle to and fro, like ſo many flying Serpents: Of theſe Fiſgigs moſt ſorts of Fireworks are compos'd. When you can perfectly make theſe, you may then proceed to the making

Runners on a Line.

AND for them is likewiſe requiſite a Mould, five inches long without a Needle: firſt make your Coffin of paper choak it at the end as before, then put it in your Mould, and fill it foure inches with Powder duſt. (Note that in the filling it you muſt put in but a little at a time, and ram it down cloſe, and ſo of all others.) Then choak it, and fill the reſt of it with corn Powder (to give a report) leaving onely ſo much of the Coffin void as will ſerve to choake it. This being done, tye it to a hollow Cane three inches long, ſo, as in tying of it you do not bruiſe the Rocket. And ſo have you

a ſingle Runner for the Line finiſhed.

If you deſire to have a double one to run forwards, and back againe, you muſt then be provided of two Runners made after the manner of the former, onely one to be an inch longer then the other: And to finiſh theſe, uſe this method. Firſt tye the long Rocket to the Cane, and at the mouth of it, faſten the breech of the ſhort one, by roling over them a little peece of paper, with ſome powder duſt in it to give fire to the long one, not forgetting to make a ſmall hole in the breech of the ſhort one with a Bodkin, that ſo the long one may take fire: having done ſo, then, turne backe the ſhort Rocket ſo, that the mouth of it may reach ſomewhat further then the breech of the long one; leſt in firing it you accidentally fire both, and by that meanes ſpoil your Runners; The beſt way of tying the double ones is to faſten the ſhort one, ſo, as the long one may be betwixt it & the Cane; for by that means it wil run without ſwagging, whereas if they be both joyned to Cane, as Mr. *Bates* and ſome others direct, it is both unſafe, and uncertaine; unſafe in this, in caſe the firſt accidentally breake, the other with the force of it will be ſtruck off; and uncertain it is likewiſe, in regard after the firſt Rocket is ſpent, the Coffin of it coming back will ſwag and retard the paſſage of the other, and by that meanes indanger burning of the Line. Let your Line bee well rubbed with ſoape

which will both ſecure it from fire, and facilitate the paſſage of the runner; likewiſe for theſe and all other let your Powder duſt be beaten, and ſifted very ſmall, for the leaſt cornes in it may indanger the breaking.

How to compoſe a Wheele.

FIrſt, provide a Wheele either round or ſquare, the better ſort are eight ſquare, made fit to the length of the Rocket, five inches each, the beſt proportion is about ſixteen inches diameter. Now having provided a Wheele, take ſo many Rockets, made after the ſame manner as thoſe are which run on the line, which you muſt faſten together, by joyning the mouth of one to the breech of the other, in the ſame manner as thoſe for the line; in the tying them on, have a care you doe not bruiſe them, and be ſure to leave ſome ſpace betwixt the mouth of the firſt, and the breech of the laſt, that ſo by firing the firſt the laſt may not take, and by that means breed a confuſion.

You may order theſe wheeles to burne either Horizontall or verticall; for the Horizontall provide a Poſt, or Staffe, with a pin on the top of it to put the wheele on; if verticall, then provide a pin faſtned to the ſide.

How to make a Club to caſt forth divers Fisgigs.

TO doe this, firſt cauſe a peice of wood to be turned foure inches diameter, let it be bored with

with an Augur of an inch and halfe bore from the top towards the bottome, leaving a bottome ſomewhat above an inch thick, and a place underneath to faſten a ſtaffe in; the length of it may be about eighteene inches: then draw a line ſpirall wayes about it from the bottome to the top in manner of a ſcrew, each line an inch and halfe aſunder, in that line bore ſmall holes an inch aſunder within halfe an inch of the bottome, and then peirce it thorow with a Peircer; let your holes be of that bigneſſe fit to containe a Fisgigge, and make them ſomewhat ſlope-wayes, that ſo the Fisgiggs may ſtand faſt, though ſlack, otherwiſe they will not come eaſily forth.

Load your Club or Trunk with the compoſition following, and then put in your Fisgiggs made as before, priming each of them, and likewiſe each hole with powder duſt, then fire your Club at the top, and they will fire one after another, and fly about in a confuſed manner.

The compoſition for this Club is,

Roch Peeter eight ounces, Sulphure vivum foure ounces, Powder duſt two ounces, Camphire one ounce, Linſeed oyle halfe an ounce; beat and mixe theſe according to the order preſcribed in the compoſitions following.

To make Rockets for the Aire.

PRovide firſt a good Mould of what ſize you pleaſe, with a Needle in it, and a Rowler with

two Rammers, the one hollow for the Needle, and the other ſad, to ram it after the Needle is covered. Having made a good ſtrong Coffin of paper fit for the Mould, and choaked as before, then fill it with the compoſition for that ſize your Rocket is of, the ſeverall proportions and mixtures hereafter follow. To fill it, take a little tin ſcope, and put in about the twentieth part of the quantity it holds, and then ram it with your hollow rammer, and ſo continue till you have fild it to the top of the Needle, alwayes beating it down with two or three good ſtrokes of a Mallet, then fill in more almoſt to the top of the Mould, ramming it as before, but with your ſad rammer, leaving only ſo much unfild as that you may double downe ſome of the paper and ram it cloſe, making a little hole with a bodkin to give fire to ſome corne powder, (to give a report) put within that paper as is left unfolded downe, and then choake it, next prime it, as ſhall be ſhewne hereafter, and then proceed to heading of it, which you may doe ſeverall wayes, either with Starres, Serpents, Crackers, or golden Raine: the compoſition for the making theſe hereafter followes. To place theſe on the Rocket; Firſt, make a thin Coffin of paper, the inſide of it ſomewhat wider then the outſide of the Rocket, which you may fit by rolling it on the outſide of the Mould, and fitting it to the Rocket, then faſten it to the top of the Rocket, and ſtrow a little powder

der in it, having firſt made a ſmall hole in the top of the Rocket to give fire to it; in this Coffin you may place ſhort Serpents with the mouths downwards, made as before, or with Stars only, Crackers, or golden Raine; having done this, take a peice of thin Paſt-board, and with a pair of Compaſſes make a round circle in it, then divide it in two, and with the one halfe make a Cap taperwiſe, fit to cover the head, and with Glew faſten it to it; then provide a dry Oſier ſticke about eight times the length of the Rocket, ſtraight, and flatted at the end, to this faſten the Rocket, tyed at both ends juſt in the choaking place, that ſo you may not looſen the compoſition within, then poiſe the ſticke, by ballancing it on your finger three or foure inches from the mouth of the Rocket.

The Ingredients for Rockets, for the Aire, of all ſizes.

FOr Rockets which containe from one ounce to foure, to one pound of Powder-duſt, put two ounces of Charcoale duſt; for Rockets which hold from five ounces to ten, to one pound of powder put two ounces and a halfe of Charcoale duſt; and from Rockets which hold from ten to ſixteen ounces, to one pound of powder put three ounces of Charcoale duſt: but be ſure that both your powder duſt in this and all other be well beaten, and finely ſifted, as likewiſe your Coale duſt. If by trying your compoſition you finde it too ſtrong,

you

you may mend it by adding a ſmall quantity of Cole duſt to it; if too weake, then by adding a little powder duſt. My advice is, to mixe a pretty quantity together, that ſo by the triall of one Rocket you may be aſcertained of the reſt; for all powder is not of one and the ſame ſtrength.

Priming for Rockets.

TAke Cotton weeke (ſuch as the Chandlers uſe) and ſoake it in Oyle of Camphire, then take it out, and roule it in powder duſt, then dry it, and keep it cloſe, otherwiſe the ſtrength of the Camphire will decay. The compoſition for Stars will likewiſe fire them.

Compoſitions for Stars, and firſt for thoſe of a blew and red colour.

POwder mealed fine four ounces; Salt-peeter, two ounces; Sulphur vivum, ſix ounces; beat theſe very fine, and then mixe them, adding thereto one ounce of Aquavitæ, and a quarter of an ounce of Oyle of Spike. To make theſe up for uſe; Take a Rowler about the bigneſſe of an Arrow, and roule paper on it, and paſte it cloſe, then fill it with the compoſition before preſcribed, and beat it hard, then cut it into ſhort peices halfe an inch in length, dipping one end in Glew, and ſtrewing the other with Powder duſt, it is then finiſhed, only let it be dry before you uſe it.

A compoſition for Stars of a very beautifull colour, the eaſieſt, beſt, and ſureſt way, never till now made publick by any.

SAlt-peeter one ounce, Sulphure vivum one ounce, Powder duſt one ounce, Camphire a quarter of an ounce; beat theſe very fine and mixe them, afterwards make a paſte of them with the Oyle of Turpentine, and then make up little peices about the bigneſſe of a Peaſe, which roule in Powder duſt, and let it dry. Of this ſort you may put two or three dozen at the head of an ordinary Rocket, the charge and trouble of making is far leſſe then any other way.

To make Golden Raine.

PRovide your ſelfe of a good quantity of Gooſe Quills, cut them off at the end next the Feathers, then fill the Quils with the following compoſition, and they will make a very glorious ſhew. To one quarter of a pound of Powder duſt adde halfe an ounce of Cole duſt, and for uſe put the open end of the quill downwards.

To make a Jack in a Box.

PRovide a Tin box ſix inches deep, with a ſocket made under the bottome of it to place it on a ſtaffe, let it be of what bigneſſe you pleaſe, in the bottome of it ſtrew ſome corne powder almoſt halfe an inch thick, then fill it with Serpents, or Fisgigs placed with the mouthes downeward, leaving a place in the midſt for a Cane to paſſe thorow,

thorow, which fill with a ſlow compoſition; (that for Stars, or theſe following are very good) then put in the Cane, and faſten a cover of Paſt-board very cloſe over the Box, that ſo it may not fire before its appointed time.

A compoſition that burnes with a flame ſlow and ſure.

ROch peeter foure ounces, Sulphure vivum two ounces, Camphire one quarter of an ounce, Powder duſt one ounce. Meale theſe very fine, and mixe them, adding thereto one quarter of an ounce of Linſeed oyl, and a quarter of an ounce of Oyle of Peeter dropped in by degrees, and ſo wrought to a paſt. To meale your Camphire, dip the peſtle in Oyle of Almonds.

Another ſort of mixture that burnes ſparkling.

POwder duſt foure ounces, Cole duſt two ounces; this rammed cloſe in a Cane, renders the ſight very delectable to the ſpectators.

A compoſition for a white fire, that loſteth long.

SAlt peeter eight ounces, Powder duſt two ounces, Sulphure vivum foure ounces, Oyle of Peeter one ounce, Camphire halfe an ounce; meal thoſe which are to be mealed, and incorporate them together.

How

How to compoſe a Caſtle of Fire-Workes with ſmall charge, that in the firing ſhall yeeld as much variety, and give as much content as any.

FIrſt, provide an indifferent large frame of wood, four ſquare, with little round Towers of Paſt-board, at the Corners, the beſt ſize is 18 inches ſquare, and twelve inches high, let the bottome be made firme to ſtand on any place, and the ſides with gates (as your fancy ſhall direct) then faſten on the inſide three ledges of wood on each ſide about, each ledge with a Groof made on the top of it, then make ſo many holes in the Frame of wood, ſuitable to the ledges, as you intend to have the Caſtle give reports you may eaſily make eight to each ledge, which contains 96 Reports; you may adde more, as you ſee cauſe; or at the top faſten many Crackers, which at the end will fire like a volley of ſhot: The manner of making theſe Reports ſhall be ſhewed hereafter; and to place them, firſt prime your Groof with a ſlow compoſition, & from the uppermoſt Row to the ſecond put a Cotten weike, primed, as for Rockets, and ſo from the ſecond Row to the third, leaving ſome hanging forth at the doore to fire it, then put in your Reports the mouthes inward, fix them to your Groofs and cover it cloſe; afterward fit a board foure ſquare to cover the top of the Caſtle, of each ſide halfe an inch broader then the Caſtle, on the foure

edges

edges of it you may faſten Paſt-board cut ſtone-work-waies in manner of a Battlement, and at each corner, place a ſmall Jack in a Box, with a long Cane in each of them, filled with ſlow compoſition, made as before; which Canes let be of the largeneſſe as may burne all the time the Caſtle is firing, in the midſt of the board on the top, place a pin to put a wheele on, made of thin Deale board, five, ſix, or eight inches ſquare, proportionable to the length of the Rockers, which faſten to the board by making holes in it, to tye them to it; on the top of this Wheele you may faſten little Statues of Babies, as Souldiers, Drummers, or the like; and as the Wheel turns, they will move about like Anticks, with much delight to the ſpectators; and ſo have you finiſhed your Caſtle. To fire it, firſt fire the four Canes in the four Boxes at the corners, then fire the Wheele, at the top, and laſtly fire the Cotten weike at the Gate, and ſo the Reports will by degrees fire upwards, and in the end conclude with a volley of ſhot. If it be exactly made, it will continue a long ſpace, with aboundance of delight.

How to make Reports for a Caſtle.

FIrſt make a Coffin of Paper choaked as before, of what ſize you pleaſe, then fill it about an inch and a halfe with corne Powder, ramming it cloſe, and at the end ram in a peece of Paper as you doe to a Musket, leaving the mouth open, and then it is finiſhed: when you uſe them, prime the mouth of it but a little.

How

How to make Rockets for the ground.

FIrſt provide a Rocket (ready finiſhed) as for the fire, then put the Breech of it into a Bladder, blow the Bladder up, and then faſten it at the choaking place, by tying it cloſe: when you fire it, throw it from you, and the force of it when it comes to the ground wil make it rebound, and ſo be in a continuall agitation.

An Almanack whereby to find the dayes of the month this preſent year 1653. *Which with the tranſpoſition of the months yearly, will ſerve for ever. Note that the year begins at March.*

6 *Auguſt*	3 *May*	11 *Januarv* 8 *October*	2 *Aprill* 5 *July*	7 *September* 10 *December*	4 *June*	12 *February* 1 *March* 9 *November*
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Thirty daies hath *September*,
Aprill, *June*, and *November*,
February hath eight and twenty alone,
All the reſt have thirty and one.

Note

An explanation of the foregoing Table.

Note that where the month ends, you muſt then begin at the firſt figure of the Table, and that every leap-year February hath 29 dayes.

To finde the day of the month by the foregoing Table.

OBſerve that the Mondayes which happen in each Month, will fall upon thoſe daies of the Month that are expreſſed in the ſame Collume underneath it. As for inſtance; the Mondaies in *Auguſt* are on the 1,8,15,22,29, daies of it; thoſe in *September* and *December* are on the 5. 12, 19,26. daies, and ſo of the reſt. Now by this to find the day of the month you deſire, firſt find the Month, and under it that Monday of the month laſt paſt, and then you may eaſily know it: As for example, if you deſire to know what day of the Month the firſt Saturday in *May* will be; firſt find *May*, under it you will ſee a figure of 2, being the firſt Monday, then reckon Tueſday 3. Wedneſday 4. Thurſday 5. Friday 6. and Saterday the 7. and ſo of the reſt. Againe, if you would know what day of the week the 18 of *November* wil be, look under *November* and you ſhall find the Monday next before it to be the 14. then reckon Tueſday 15. Wedneſday 16. Thurſday 17. and Friday 18. and ſo of the reſt.

FINIS.

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A to M in 8

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